

University of Roma.
1870.

- Introductory
Lecture
on
Jenner
&
Vaccination



1870-3-28 (1)

Introductory
to the 5th Course of the
Aux. Faculty of Medicine, Univ. of Pa.
March 28th 1870.

Our presence here to day, Gentlemen,
invites ~~is the occasion of~~ reminiscences of the past. This University, as you no doubt well know, ^{and} has a history, which has been written, well written, by one of the most ~~honest~~ ^{as recorded in Dr. Carson's excellent historical volume,} members of its Faculty. More than 50 years ago, in 1816, the Trustees of the University created in its ^{first} Faculty of Natural Science. The appointments therein were as follows:

Dr. W. P. C. Barton, Professor of Botany.

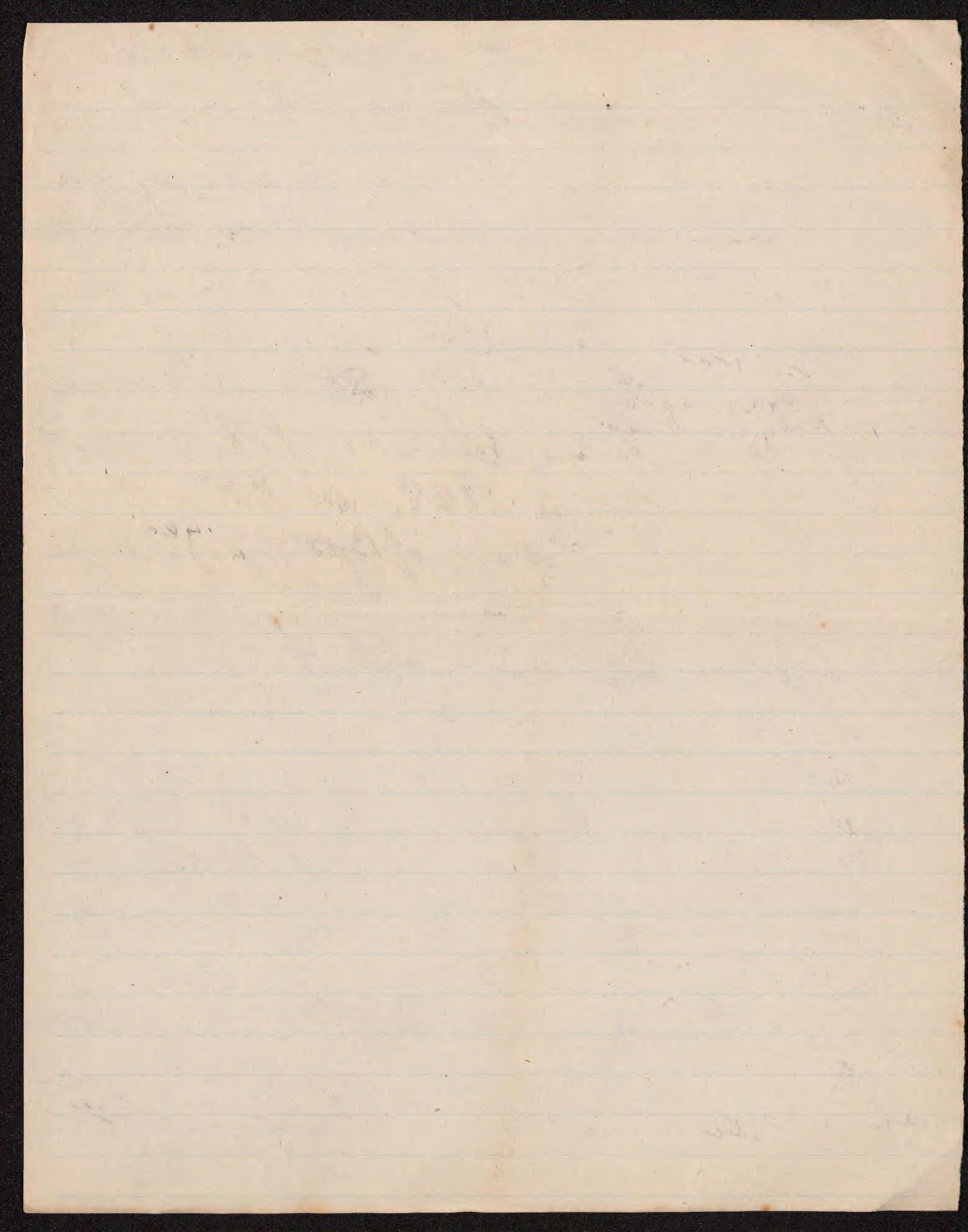
Dr. Chas. Caldwell, of Natural History.

Dr. Thos. Cooper, of Mineralogy & Chemistry.

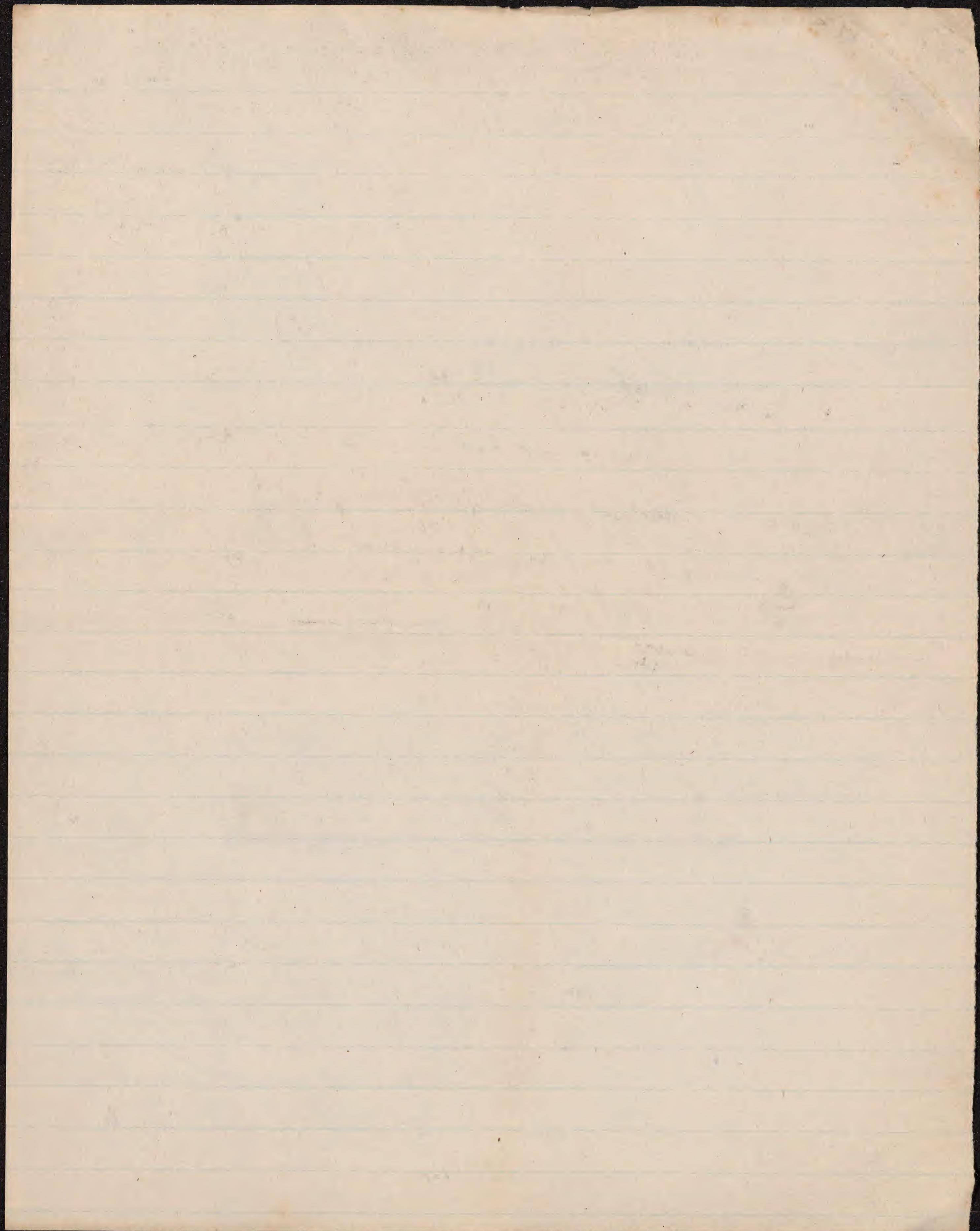
Dr. Thos. T. Nelson, of Comparative Anatomy.

A professorship of Natural Philosophy was at the same time transferred from ~~its~~ place, previously held, in the Medical Department, to ^{one in} this Faculty of Natural Science; but it does not appear to have been filled at that period.

Be observe, then, that the idea ~~is~~ ^{recently} made ^{fully} practicable, ~~now~~ ^{now} by the liberality of one whom, it appears to me, more than all others has bri-

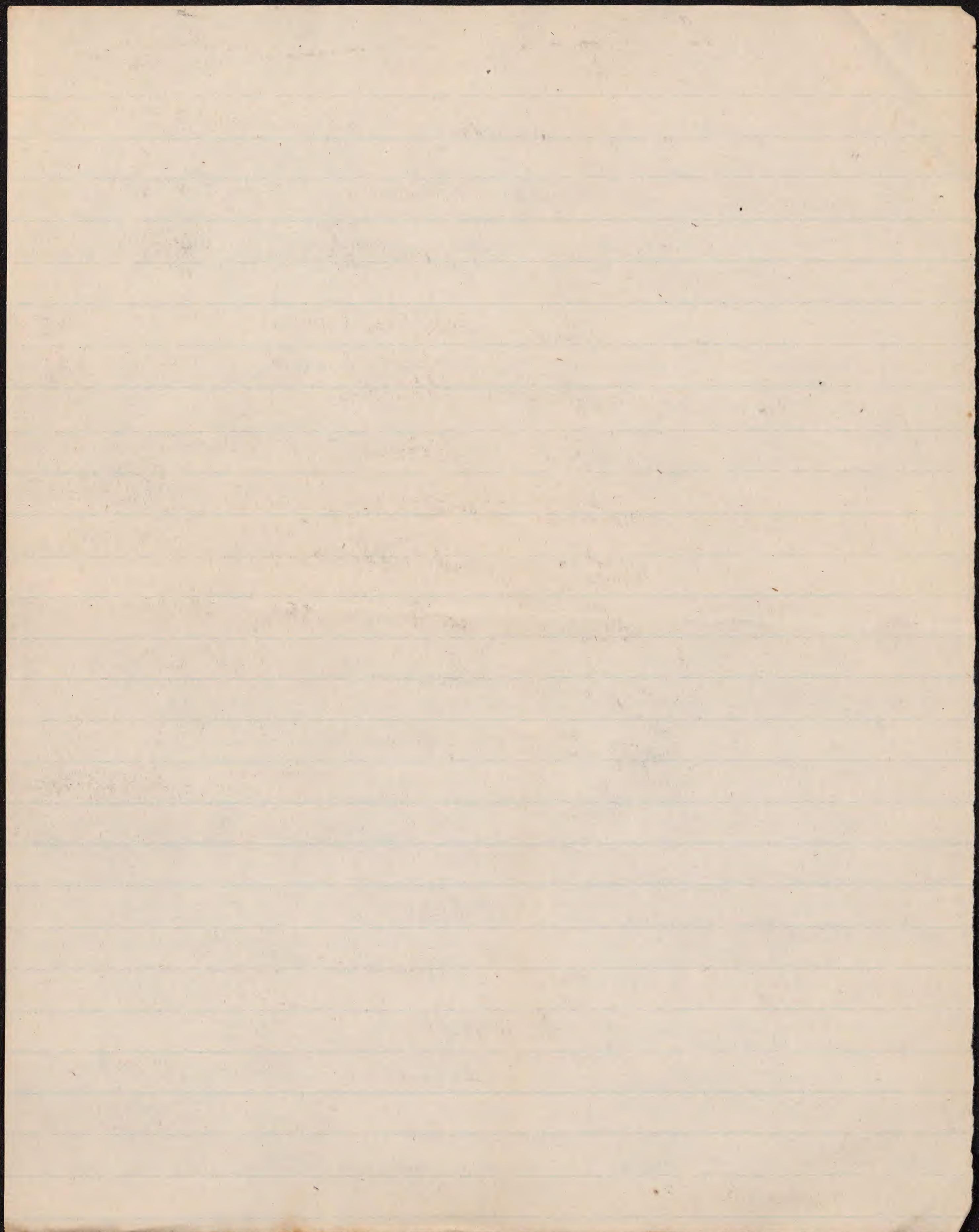


versity, and the medical profession of Philadelphia, ought to delight to honor, is most fully sanctioned by an earlier conception, and partial realization. Much sooner, still, the direct connection between natural science and Medicine was, here, recognized. One of the first members of the faculty, in the ^{initial organization} ~~of the institution~~, Adam Kuhn, delivered a full course of lectures on Botany, in 1768. Mr William Bartram was elected Professor of Botany, in 1782. Dr Benjamin Smith Barton delivered twenty-four courses upon botany, in ~~the~~ ^{successive} Summers, while he was Professor of Materia Medica, and afterwards, for a short time, of Practice. Dr Barton may be remembered as, with the exception of Dr Kuhn, the first public teacher of Natural Science in the cis-Atlantic world. His influence, in this department of study, was great. In Dr Carson's words, "He created a taste for these pursuits, that has never been lost in this community; and which has ultimately developed itself in permanent establishments for the cultivation of the natural sciences." Besides Dr W. P. C. Barton



and Dr Bigelow and Baldwin, the science
of botany owes ^{to him} much ~~as~~ ^{as} the preceptor of
Dr. William Darlington; so long known as the most pop-
ular, if not the most celebrated, botanist of our state.
It is not needful for me to add, that this science
has, since that time, been continuously ^{and ably} represented in this
University, in the teachings of Dr George B. Wood, who
belongs to our present as well as to the past, and in those
of Professor Carson, and of Professor ^{H.C.} Wood, of the faculty
on whose behalf we are here met to-day. That such
instructions, and the labors and publications of such men,
with those of Wistar, Rodman and others of our profession
in ^{the allied} departments, contributed as much as any influences what-
ever to make this city a scientific centre, is not to be doubted.

But, the days which I have referred to in this
retrospect were those of the golden age of Medical
ability in Philadelphia; the days of Rush, Physick,
Wistar, Dorsey, the Bartons, Dewees and others, who made
~~that~~ for this university and for the city that reputation which
constituted it the medical metropolis of the country; a reputation,
gentlemen, which we may wish, - and I would venture to call
on you, as members with us of the University to determine, shall
never suffer decline.

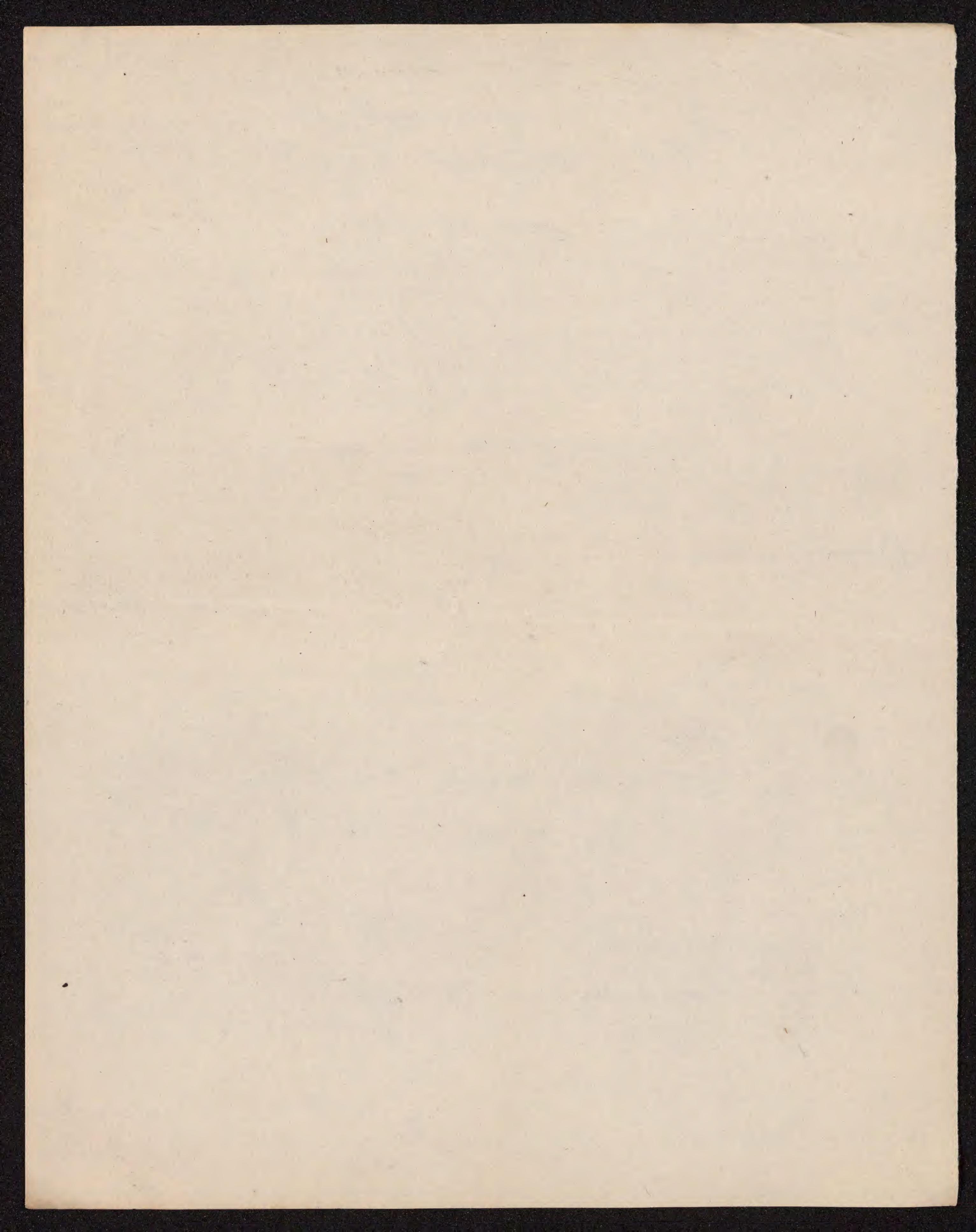


In that favored period, then, the (4)
idea was, as we have seen, fully accepted, that
the education of every physician ought to be
liberally scientific. But this was ~~then~~ not
at all a new idea. It is even as old as
Hippocrates; as Medicine itself. The 5 years' ~~then~~
preparation of the Sons or priests of Asculapius
involved, before initiation into the mysteries of the profes-
sion, a careful study of, and illumination in, the gener-
al or accessory sciences, as far as ^{then were} then known. The
very word, physic, like physics and physiology, is
derived from ~~the~~ ^{the} four, nature. That, in many
quarters, medicine has been, ~~then~~ ^{now} ~~and~~ ~~and~~
and, in some is yet, allowed to fall out of its ^{now} ~~rank~~
~~and~~ ^{kinds of} legitimate relations with all other ^{now} ~~natu-~~
ral knowledge, is to be ascribed to the same
causes as those which ~~then~~ ^{now} left the Colleges and
Universities of Europe ^{for a long time} ^{general} so far behind the progress of
mankind, as to require, in our day, a vigorous, &
yet incomplete, effort of reform.

The idea that those relations are (5)
positive and important is a true one. For,
is not medicine a science? Every ^{advanced} art is a
body, of which science is the soul. And ^{medicine} is not
either a metaphysical or a mathematical science;
therefore certainly ^{one of the} natural or physical sciences.
Moreover, as time goes on, ~~this~~ truth becomes more
and more of moment. The need of the scientific
spirit, ~~the~~ ~~the~~ mind and method, grows more
and more imporous to the physician, because of the extension
of the materials and processes of his own art, - and,
also, because ~~the~~ general diffusion of scientific knowledge
makes it impossible for him, without it, to keep upon
the level of the minds of those about him. It is alto-
-gether a mistaken notion, therefore, that a physician can do
~~nothing~~ in our times, and in this country, with a mere
routine knowledge of drugs and symptoms, without a culti-
-vated intelligence. What he needs, as much as anyone
for any vocation whatever, is, ~~the~~ first of all, the
training and development of all his faculties;
and, among them, ~~especially~~ ^{especially} those of observation and judgment.

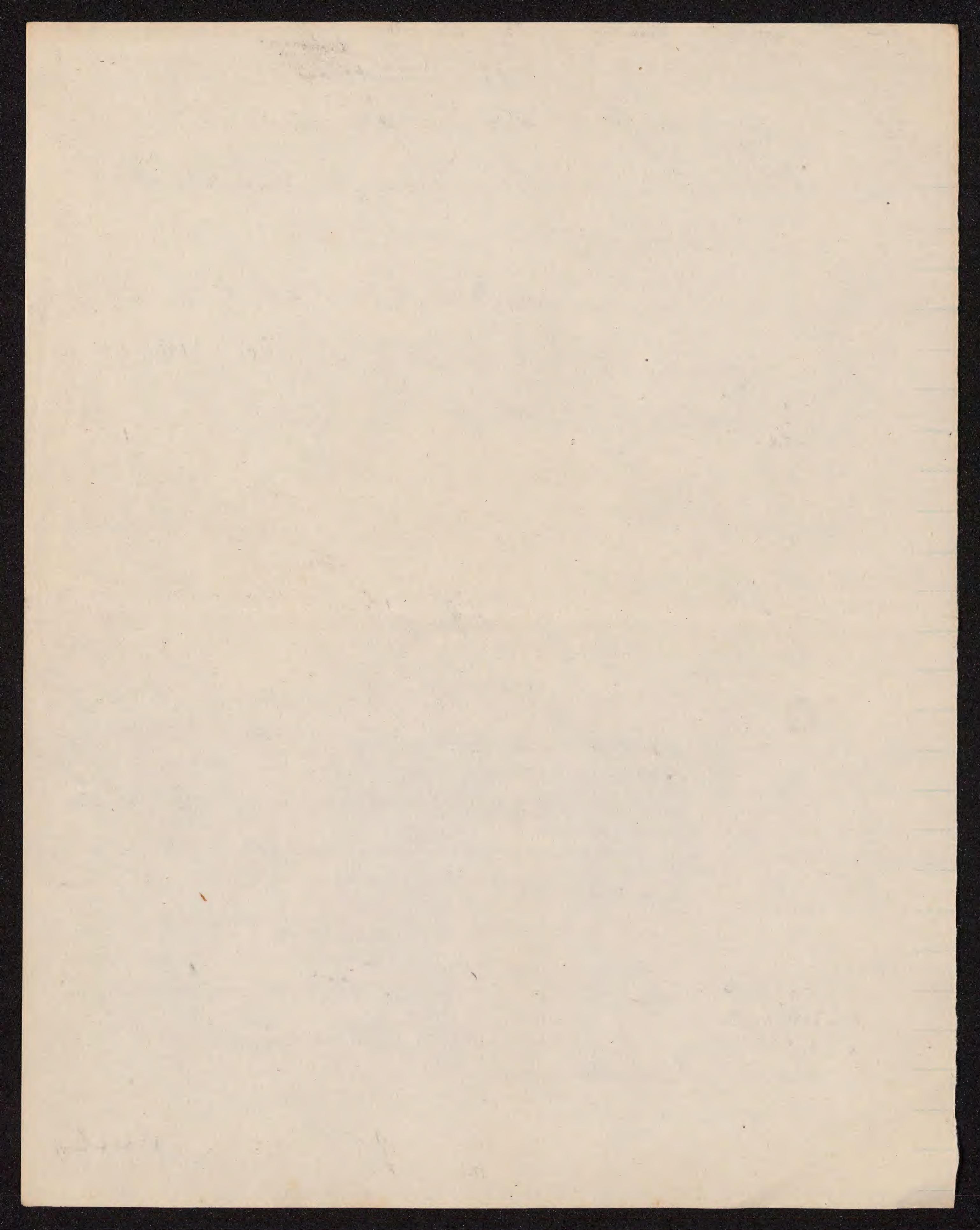
Of the physicians of all time, who
have been the greatest, and most celebrated?
Assuredly those who have been the most scientific.
This applies to those who were expressly practical;
as Hippocrates, Galen, Sydenham. But it is
even more remarkable in those ^{who were the} magnates of discovery,
Harvey, Jenner, Laennec.

So admirable is the example furnished by
the ~~one~~ of these, Jenner, of the combination of the
scientific spirit with the ^{practical} mind of the ~~practitioner~~
~~of medicine and surgery~~ physician and surgeon,
that I propose to ask your attention for a
short time to the prominent incidents of his career.
This is the more apropos, because that which
made him stand highest in public favor and
enduring renown, the discovery of vaccination, is
immediately related to a subject ^{which} will ~~be~~ before
us in our coming lectures, that of Public hygiene;
and, moreover, because a more than ordinarily injurious
effort of Medical scepticism has, latterly, threatened to un-
settle the confidence of the community, and, if possible,



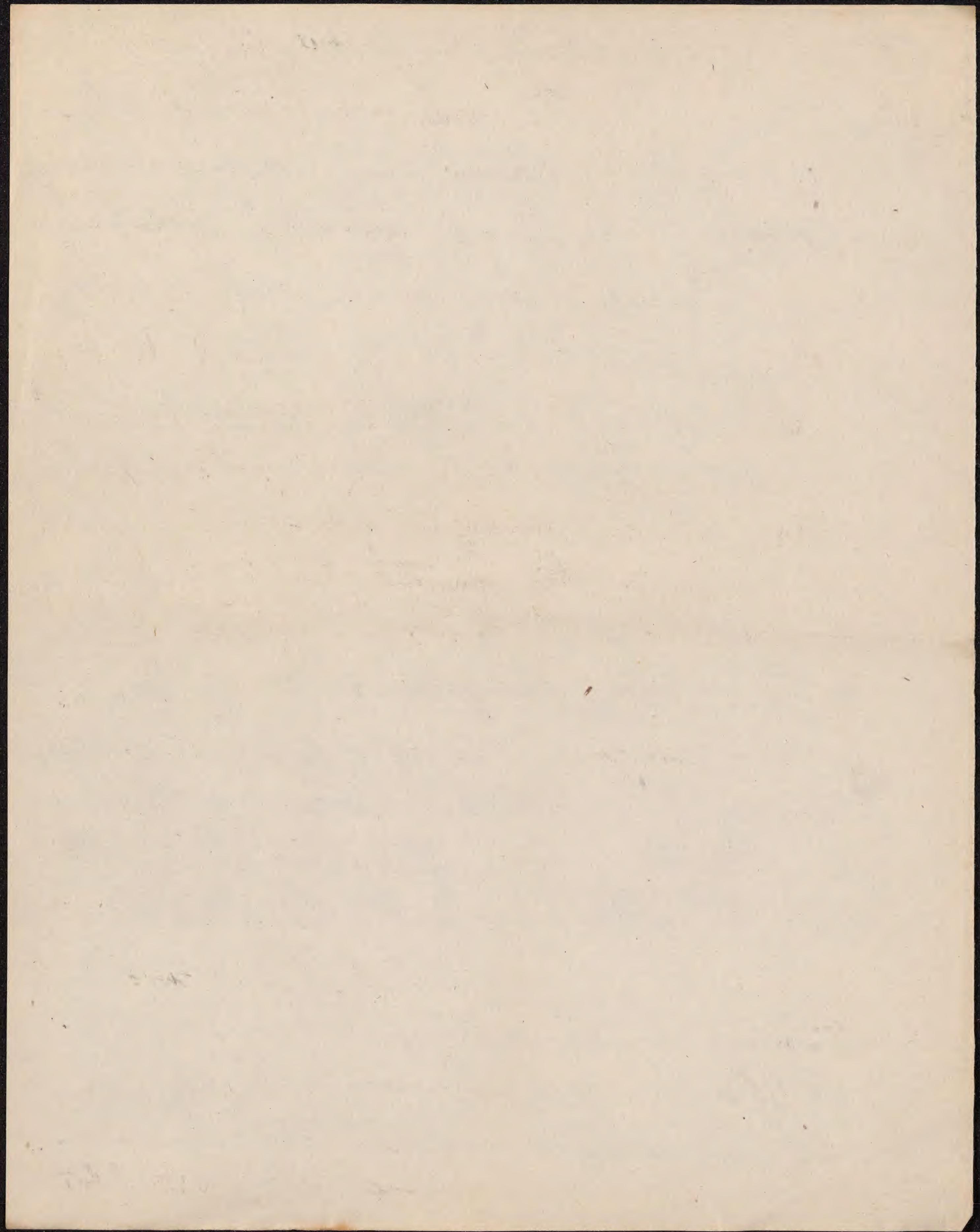
of the profession, in its value. (7)

Dr Edward Jenner, it may interest some of you to be reminded, was a country surgeon and physician. The son of a clergyman of good family, in Gloucestershire, ~~had been~~ born in 1749. ~~He~~ was well taught in the country, until old enough for surgical and medical study. ^{This} ~~study~~ was first conducted by an eminent surgeon near Bristol; and ~~then~~ then concluded by a two years' residence ~~in~~ ~~at~~ ~~the~~ ~~same~~ ~~place~~ in London, as a favorite pupil of John Hunter. Jenner had early shown a strong taste for the ~~knowledge~~ ^{knowledge} of nature; but this was fostered, directed and trained, in an eminent degree, by the influence of Hunter's master mind. If this great surgeon, physiologist and naturalist had left no ~~original~~ ^{original} works of his own, we might almost say that the world owes him Jenner; as it is very doubtful whether the difficult problem of vaccine inoculation would ever have been wrought out, ~~in~~ ^{through} all its obstructions,



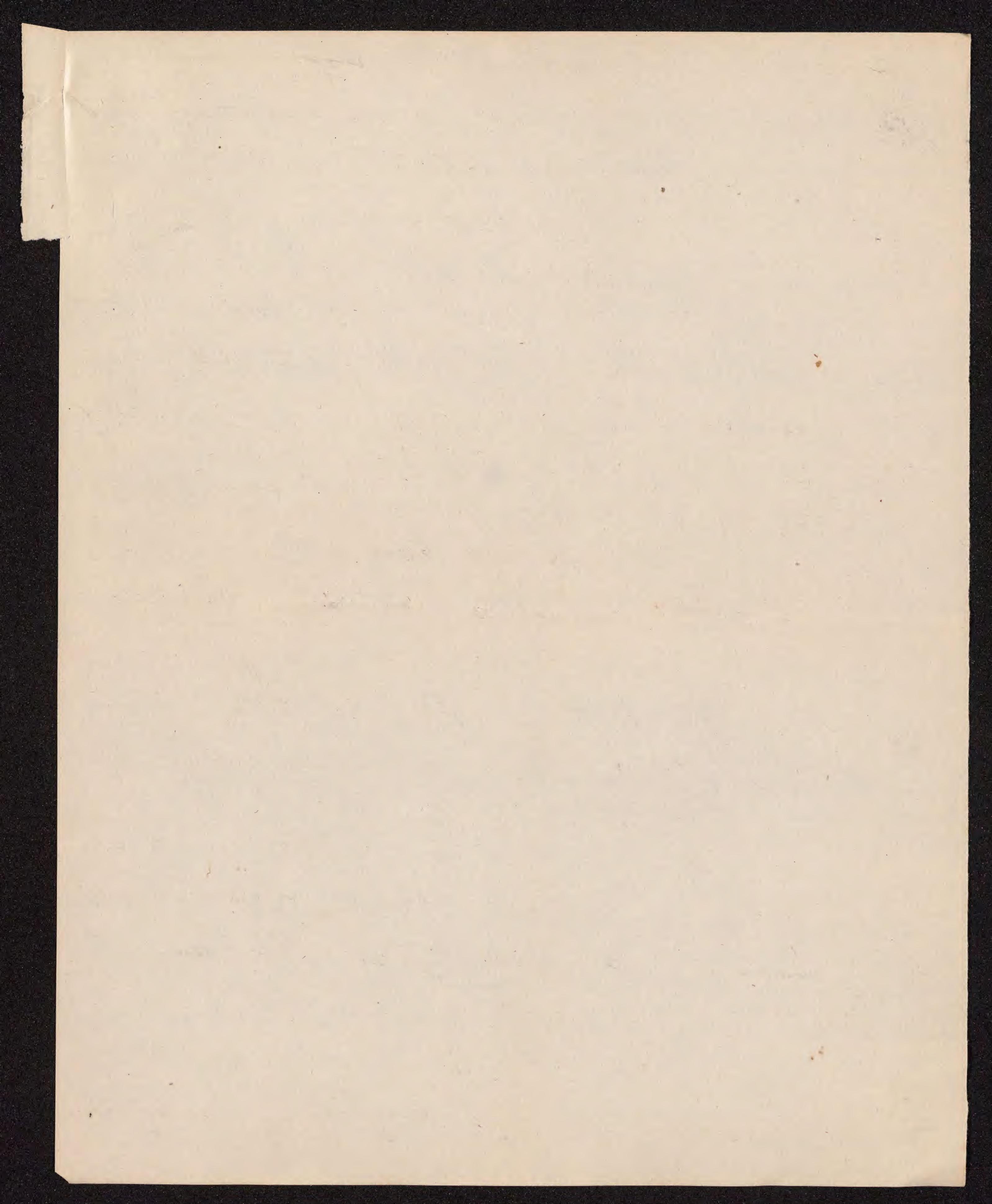
to its glorious end, but for the vigorous (8)
culture, and at the same time severe discipline,
of the investigating faculties, which Hunter's
precept, example, companionship and life-
long correspondence gave him. While in London,
a new impulse to his love of natural history
came, through the opportunity to arrange and pre-
pare the valuable specimens collected in Capt. Cook's
first voyage of discovery, by Sir Joseph Banks.
Hunter was an admirable dissector of delicate structures;
as was shown by a preparation, ^{of his} long preserved, perhaps
yet in existence, representing the progress of the ovum
of the chicken, from its first germination to the end
of incubation; every part being shown with the most perfect
skill.

Returning from London, he began
the active practice of his profession; and soon
acquired a very good, but not too engrossing a business.
He found leisure, in his daily rides over the country,
which, in the beautiful valley of Gloucester abounded



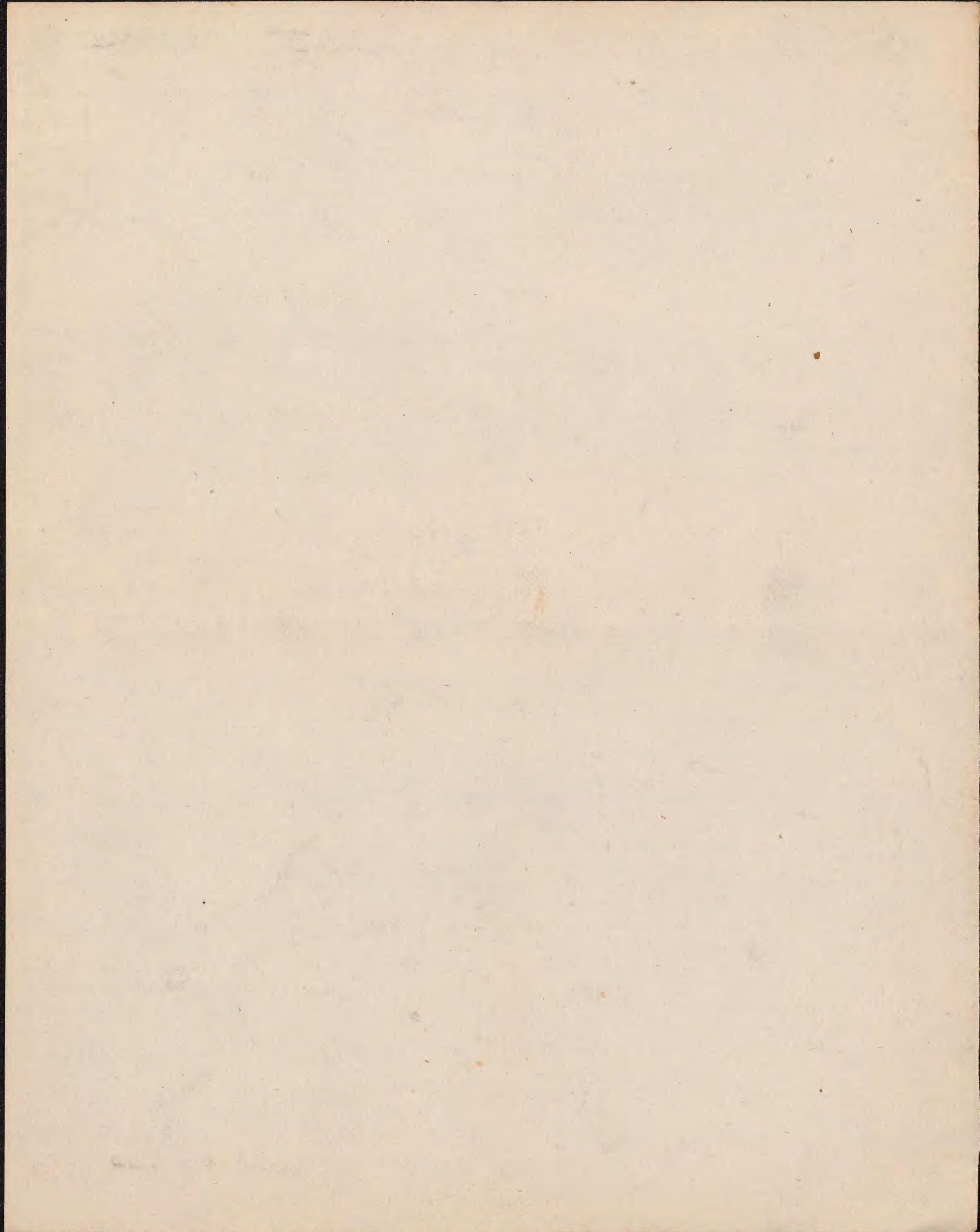
with life of every kind, to pursue his studies (9) in natural history. He was, also, highly social; a member of two medical and medico-conivial societies, a ready and graceful poet, and a skilful musician. Some of his epigrams would have done credit to Pope or Swift; and his piece on the "Signs of Rain" is often cited yet, in agricultural papers and almanacs, as containing, in poetical form, a more terse and vivid description of the results of close observation in the country than any thing written since Virgil's Georgics. John Hunter kept him engaged in sending him specimens of all sorts, alive and dead, for his experiments in London. Their letters are full of little but hedgehogs, cuckoos, bats, toads, salmon, porpoises and eels. Hunter tried to persuade him to join himself in establishing a School of natural history and human & comparative anatomy in London; but Jenner was not then to be tempted from the country.

The most remarkable contribution made by him to natural science was his observation and description of the peculiar and previously not understood habits



of the cuckoo. The female of the European species (10) of this bird, unlike our own, is an ornithological filibuster or usurper and destructive tyrant. It makes, unless in rare exceptions, no nest of its own; but deposits its eggs in other bird's nests, — as that of the hedge-sparrow, or the fauvette. What is more strange is, that the parent bird, whose nest is thus intruded upon, takes good care of the foreign egg, and, when it is hatched, of the young cuckoo. But, with a seemingly unnatural ingratitude, this young bird, growing faster than the native birds of the nest, and being stronger, ejects the latter altogether, and retains possession. The paper in which Dr. Jaime, for the first time, gave full account of these facts, was presented through John Hunter to the Royal Society, and, in their Transactions, attracted much attention.

But this was not ^{by any means} the only inquiry into such subjects. He experimented, under Hunter's suggestions, into the hibernation and reproduction of various animals; noticed much concerning the migrations of birds; and became well acquainted with the geological relations of the rocks and fossils of his neighborhood. Besides all

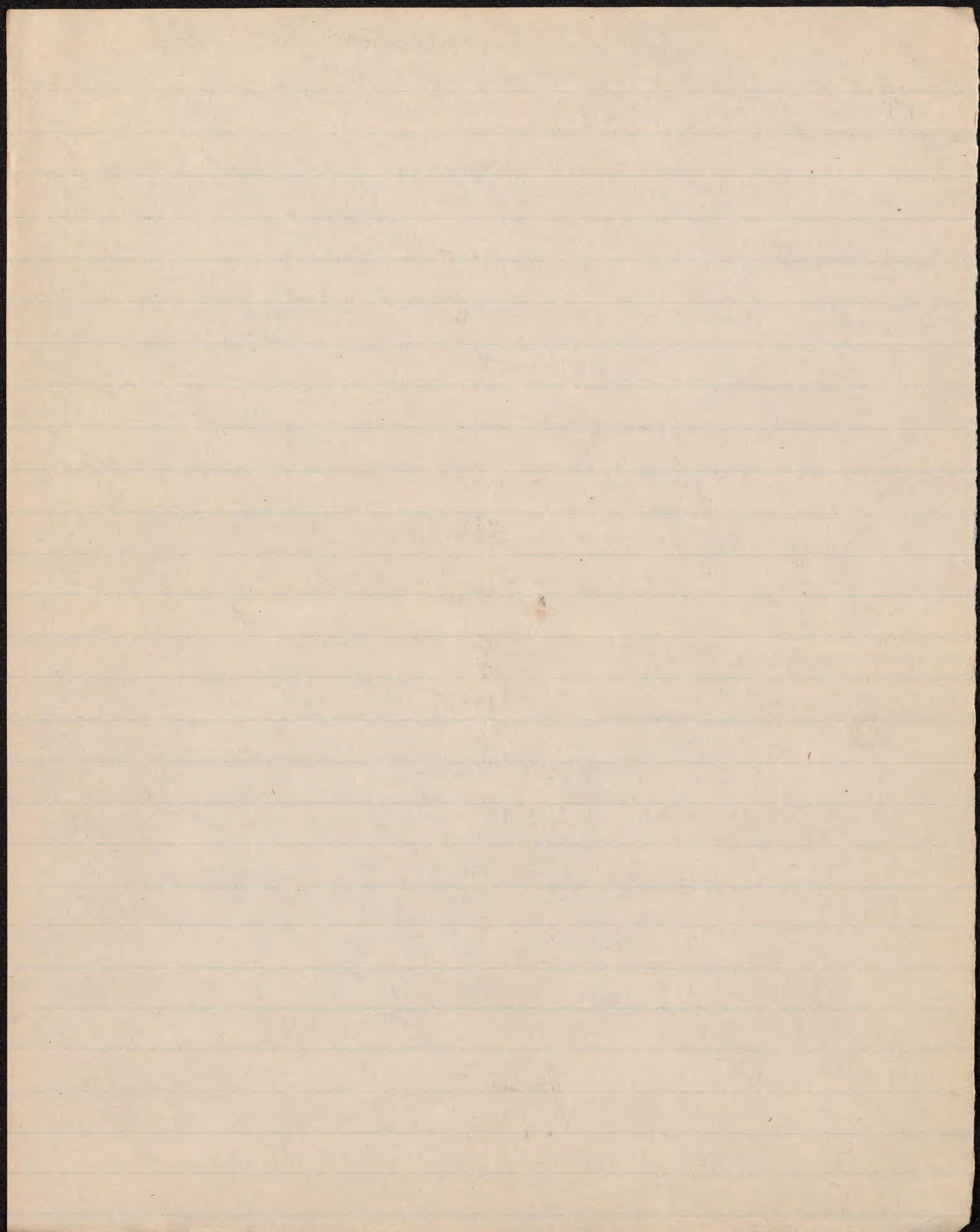


this, his studies in morbid anatomy and pathology ¹¹ alone might have furnished reputation enough for an ordinary man. He was the first to point out ossification or other degenerative disease of the coronary arteries as occurring in ~~connection~~ connection with angina pectoris. He observed, also, in one case, in 1778, in consultation with another practitioner, an appearance which, being described as a firm fleshy tube, within the coronary artery but having no connection with its walls, - we should now regard as an instance of embolism. To one of the medical societies to which he belonged he ~~had~~ communicated a paper, afterwards lost without publication, containing observations upon "a disease of the heart which frequently comes on during attacks of acute rheumatism, and leads to enlargement and disorganization of the part." In spite of claims of priority made on the part of others, it is probable that he was at least among the very first thus distinctly to recognize the characters of rheumatic endo- (peri-) carditis. We may remember that Jenner was the contemporary of Corvisart and Laennec; - the immortal treatise of

the latter having been published in 1819. 12
Jenner died in 1823.

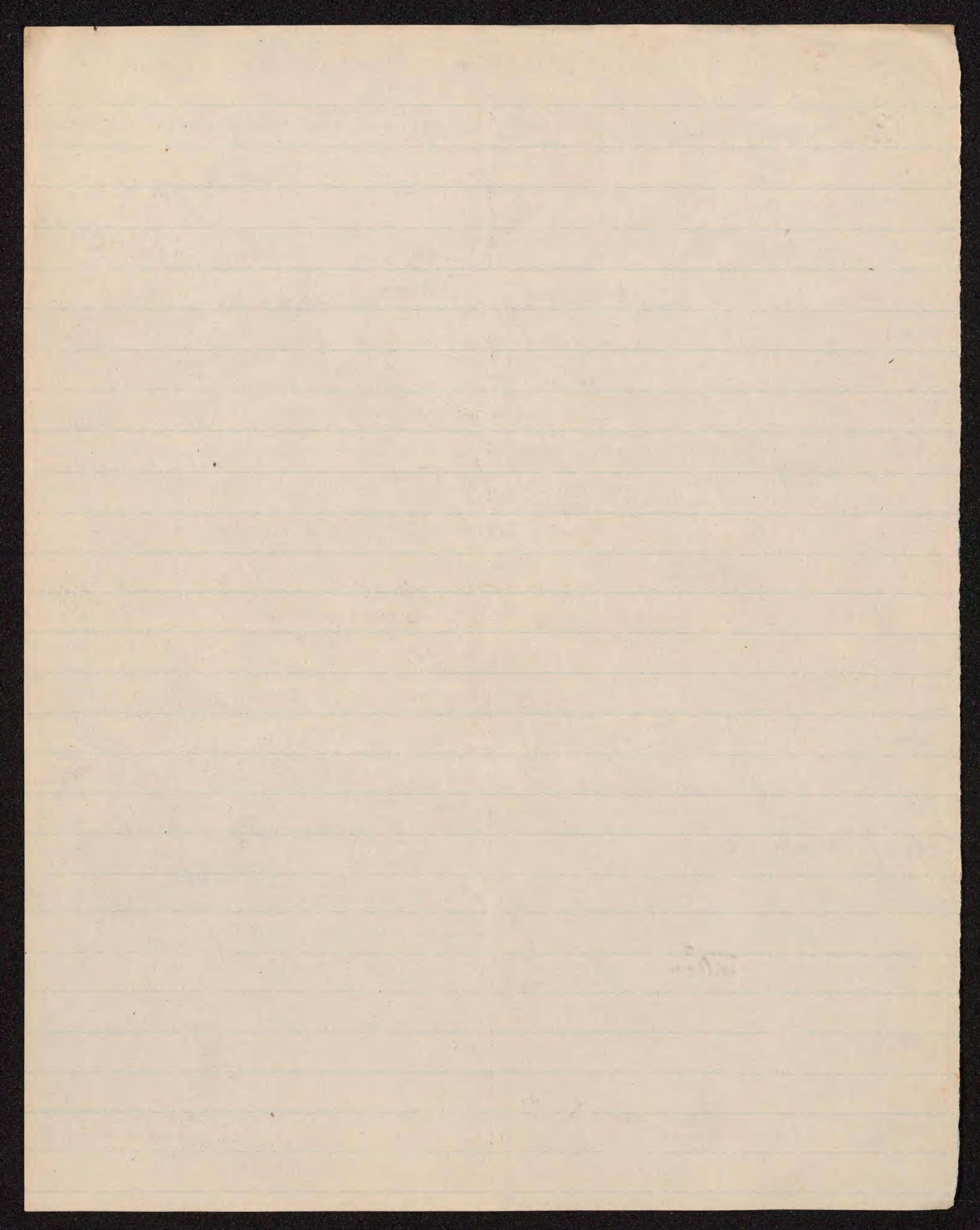
He was associated ~~with~~ with Hunter, in investigating the nature and history of hydatids, in other animals as well as in man. By his labors in connection with the study especially of ^{tubercular and other} degenerative formations and affections, Jenner contributed toward the gradual rectification, not completed until within the last ~~last~~ half or quarter of a century, of that once prevalent error, that all diseases, local at least if not general, are but modifications or degrees of inflammation. But all these were only ~~subsidiary~~ or preparatory inquiries in comparison with the ~~the~~ great achievement of his life, the introduction of the practice of vaccination. To this, even though the history of it may be familiar to you all, I desire to invite a few moments of attention.

When Jenner was quite a youth, he was struck with ~~struck~~ an occurrence in his ~~preceptor's~~ private office. A young Country-woman, conversing about

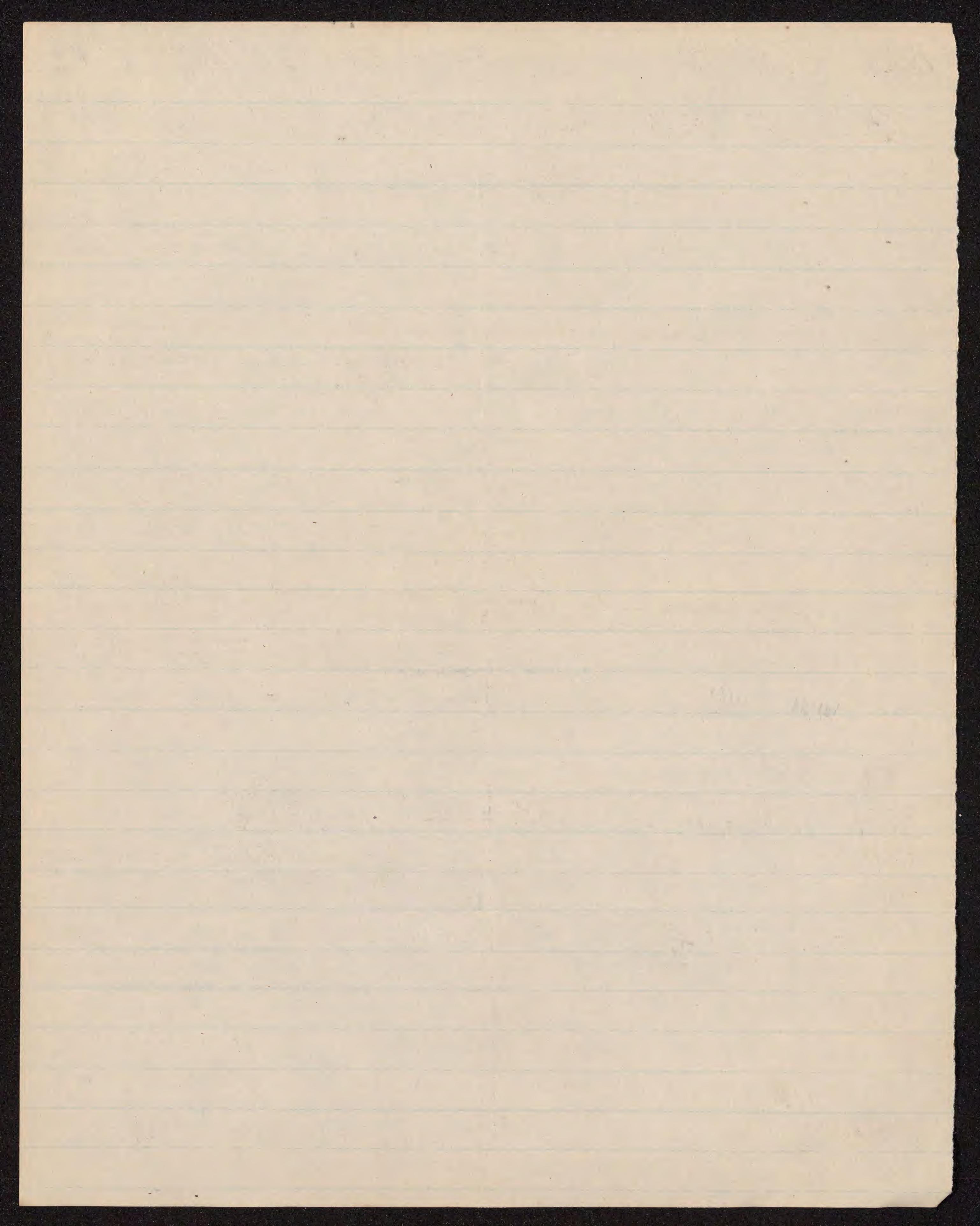


small-pox, said, - "I cannot take that disease, 13
for I have had cow-pox." It seems, from other
evidence, that such an opinion prevailed among the
dairies of Gloucestershire! On a tomb-stone at Tet-
minster, an inscription asserts that Benjamin Jesty, a
farmer, in 1774 (some say 1770) inoculated his wife and children
with the cow-pox, to prevent their getting small-pox.
The same story was related, after Jenner's introduction
of vaccination, of a Mrs Rendall; although without much
proof. When the Duchess of Cleveland was taunted by her
companions, Moll Davis (Lady Mary Davis) and others,
that she might soon have to deplore the loss of that
beauty which was her boast, the small-pox then
raging in London, she is said to have replied
that she had no fear of it, for she had had
a disorder which would prevent her from ever having
the small-pox. But all such knowledge
was, with those who had it, practically unproductive,
until Jenner took it up, with the intuition of genius
and the mastery and patience of ^{the} scientific mind. When
he went to London, in 1790, he talked about it to
Hunter and others. After his return and engagement in

practice, he urged inquiry concerning it (14) upon his medical friends. So persistent was he in this, and yet, with them, so faithfully, that one of the Medical Societies to which he belonged threatened to expel him if he continued to harass them with so unprofitable a subject. Beginning, however, his own observations ^{and inquiries} in 1775, by 1780 he was able to perceive ^{the dawn} of the future greatness of his achievements. His first experiment was with small-pox; upon his own eldest son. Variolous inoculation ^{upon him,} subsequently took no effect, confirming Jenner's opinion that this, as well as cow-pox, was identical in nature with small-pox. For other experiments of various kinds, and close, exhaustive study of the whole subject, a number of years were yet required. In the first place, he found that what was commonly called cow-pox did not always prevent small-pox. Instead of being discouraged by this, he went on to ascertain, by patient scrutiny, that cows are subject to a variety of spontaneous eruptions about the udder; that they all



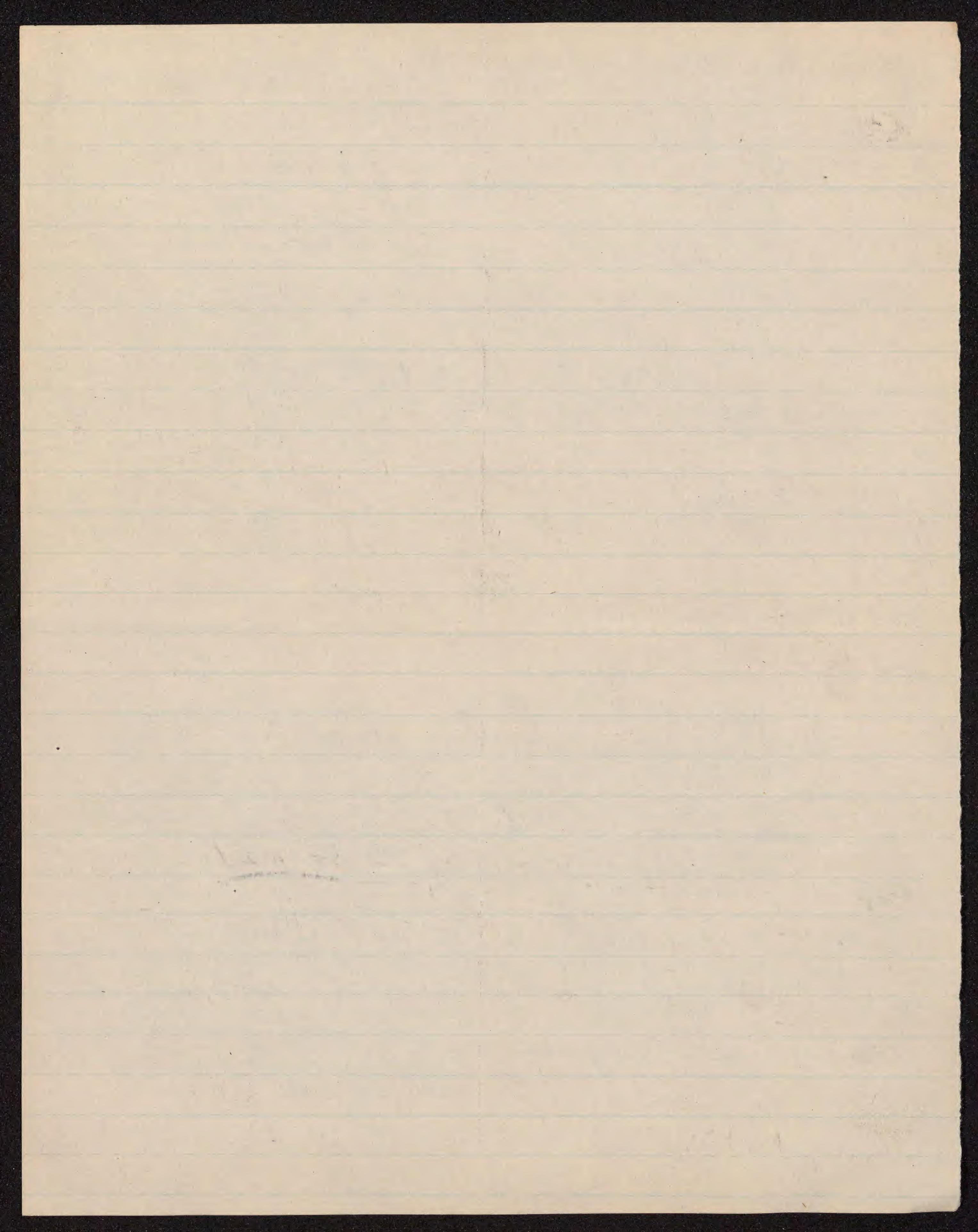
are capable of communicating sores to the hands (15)
of the milkers; and that whatever sore was so
produced was called, in the dairies, Cowpox.
He had to designate, therefore, a spurious and
valueless, as well as a true, protective Cowpox.
The latter he believed to be identical with the
smallpox of the human subject, and also with
the ~~poison~~ ^{poison} of the heels of the horse. This
^{last} opinion, which has not been largely insisted
upon by other writers, was confirmed by ~~numerous~~
facts, made known especially by Loy of York-
shire, ~~and~~ ^{and Viborg of Denmark.} Sacco of Milan. It is probable, however,
that in the horse as well as in the cow, there
is more than one disease going by the same name. Dr
Valentin of France is assured to have proved that the ass, sheep and goat are all suscep-
tible of vaccine inoculation. Next, however, Dr Jenner found that, sometimes,
the genuine cowpox could not be depended upon.
There was a difficulty that would have disheartened
most men. But, with that faith in an ascertained
principle which is ^{essentially} ~~an~~ element of the truly scientific
mind, this, also, only led him to repeat, vary,
and closely analyze ~~of~~ his Observations. Thus
he found, finally, that it is only in a certain state of



the virus that it is capable of affording (16) protection ~~With~~ from variola; while, even when not possessed of this power, it may produce a local affection of a somewhat peculiar and yet singular kind.

For actual, satisfactory trial with it upon a human subject, he had yet to wait a good while. Meantime, he conversed and corresponded largely with distinguished medical men, in London and elsewhere; Sir Everard Home, Cline, Bayly, and others took more or less interest ^{in the matter,} but no one shared his enthusiasm, or, with any confidence, his hopes.

On May 14th, 1796, however, ~~With~~, a day celebrated ^{distributed medal} by a ~~publicly~~ ^{announcing} in one of the great capitals of Europe, his ~~With~~ crucial experiment was performed. He inoculated a boy of eight years of age with cowpox matter. The eruption followed, with the characters which he now so well knew. Then ~~came~~ ^{After} the critical test, of subsequent small-pox inoculation. This, too, was done; and a perfect



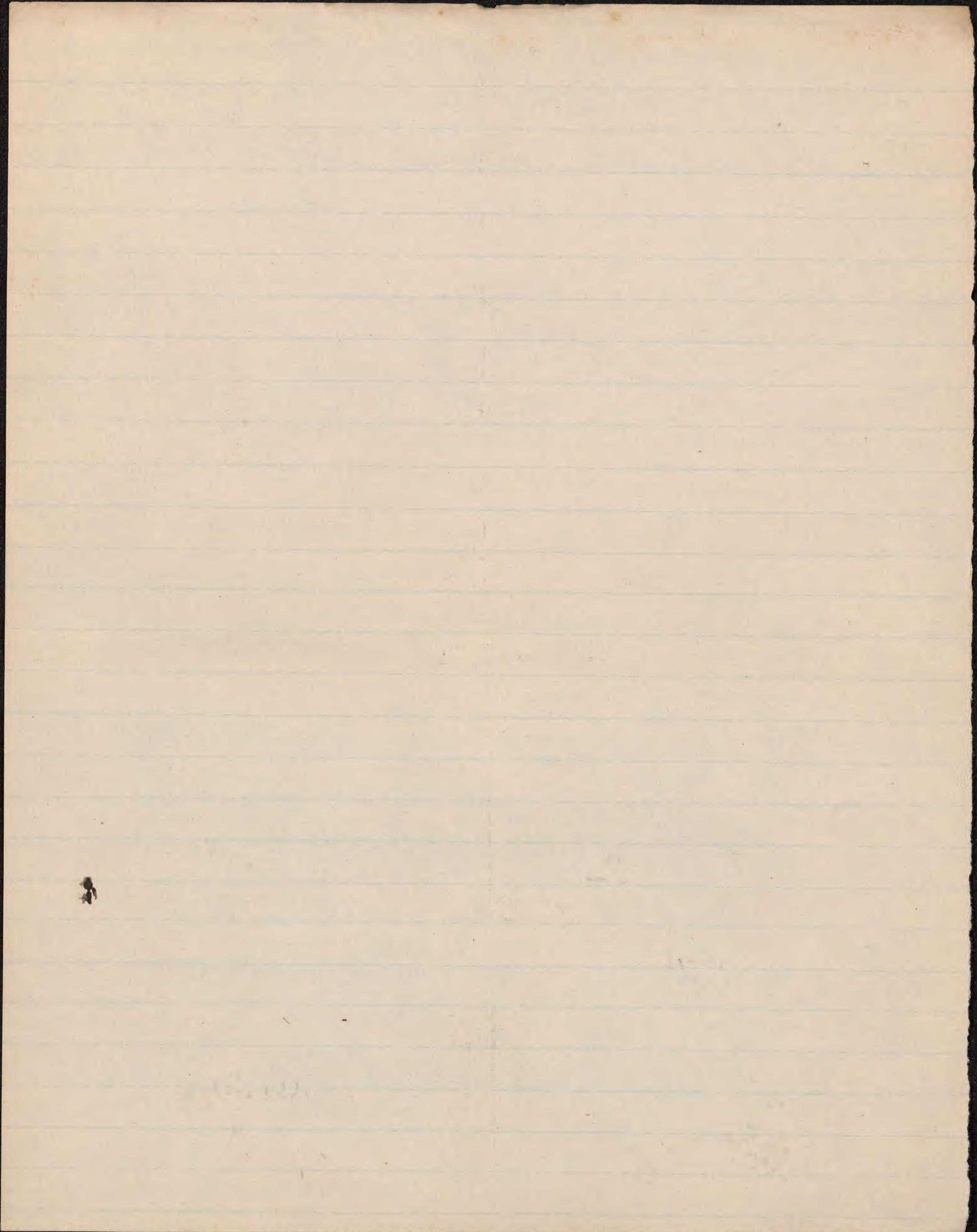
immunity was demonstrated. Were Jenner's (17) labors now at an end? Might he not now rest and wait for a glorious reputation to come to him? On the contrary, - in the letter in which he announced the full success of his first vaccination to his most intimate friend, he concludes with the words, "I shall now pursue my experiments with redoubled ardour." Indeed, by far the hardest part of his task was yet left; - to convince the world of the value of his discovery.

One might have thought, that to make it known and appreciated by the members of his own profession, ^{would} not be very difficult. Even there, however, obstacles met him. His great work, the "Inquiry", was published in 1798. It contained an account of 23 cases of ^{the} vaccine ~~infection~~ affection, 16 of them ~~were~~ ~~had~~ taken by contact with the cow, and the rest by inoculation with the matter. Coming to London in the year of the issue ^{this book},

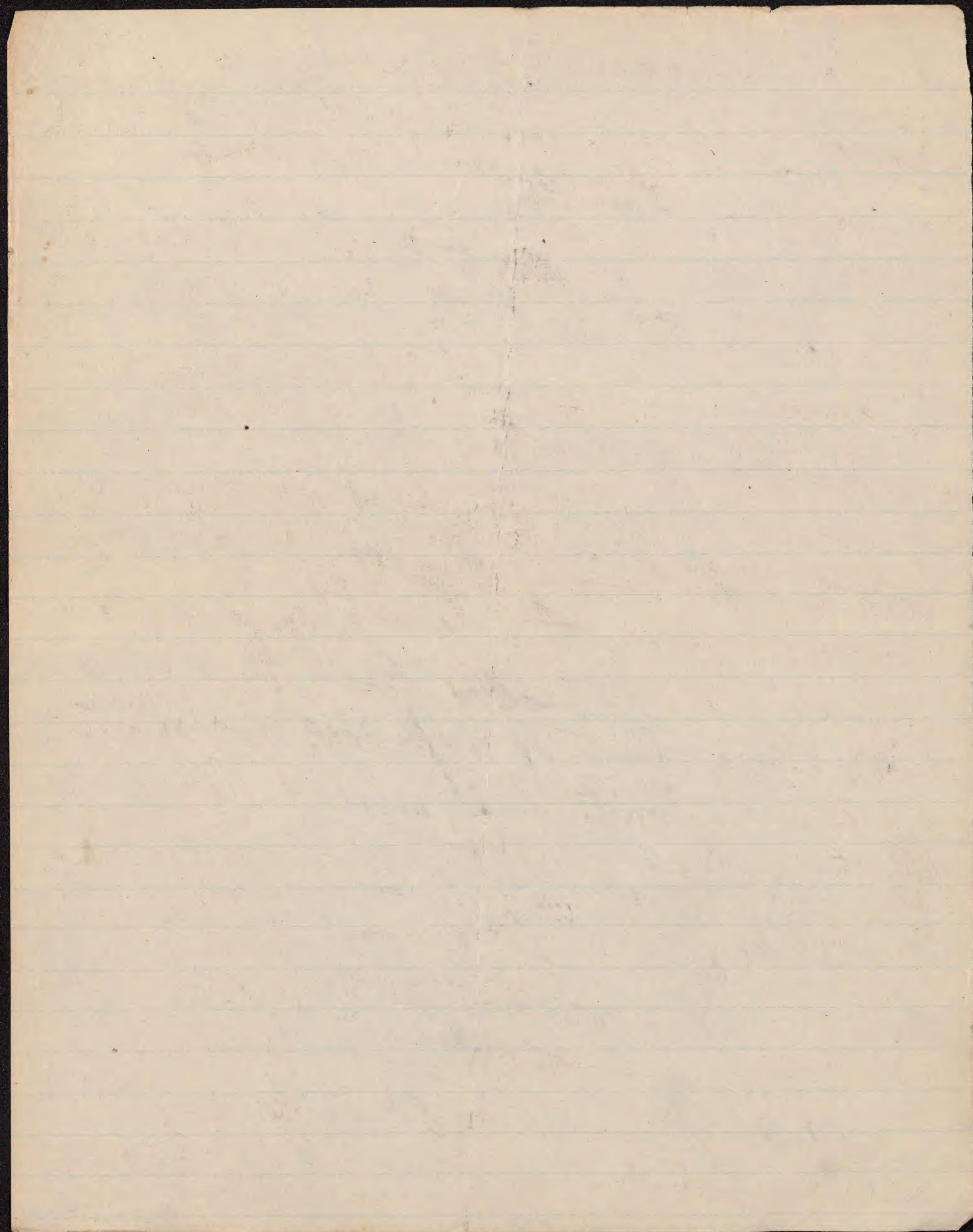
1900-1901

he was disappointed and mortified that, during a (18
stay in the city of 3 months, he was unable to find
a single individual willing to allow himself to be
vaccinated so as to exhibit the disease for the
instruction of the profession. Some virus which he took
to London with him was, nevertheless, consigned to Mr Cline,
who inoculated with it a child suffering with hip-dis-
ease; thinking that it might be remedial. An
eruption followed, and the child was afterwards in-
oculated with small pox matter without effect.
But Mr Cline did not succeed in using the same
virus with other Patients; and Jenner was at that
time unable to procure fresh matter in the country
near him. At one period of his investigations the cow-
pox seemed to disappear entirely from Gloucestershire;
while in Cheshire, also a dairy county, it was not
known; though discovered a little later in 18th Counties of
England, as well as in many other countries of both hemi-
spheres.

It may interest those, if there
be ~~any~~ such, to whom the ^{in its historical aspect,} subject is comparatively
new, for me to say, that inoculation with smallpox



matter for the benefit to the individual of greater (19)
wildness in the attack than when taken in the usual
way, was first advocated in England by
Timoni of Constantinople, in 1714, and in Venice by
Oylarini; but ~~it~~ was fairly introduced from the
East by Lady Mary Wortley Montague, in 1718.
That the total amount and consequent mortality
of Small-pox was increased by the practice
of inoculation, the disease when so produced being as
contagious as when spontaneous, seems to be beyond
doubt. Without Fawcetts discovery to replace it,
it is probable that inoculation would ~~never~~ have
been given up. Of those actually inoculated, about
1 in $\frac{300}{50}$ died. ~~From~~ Natural Small-pox, from 1 in 2
or 3, to 1 in 7 or 8; and nearly all who survived
were disfigured ^{often horribly} by the effects of the eruption. So great were
the fluctuations of opinion ~~as~~ concerning inoculation,
that while in 1754 the London College of Physicians
declared the fullest approbation of it, in 1763 it was
prohibited in France by Royal authority.

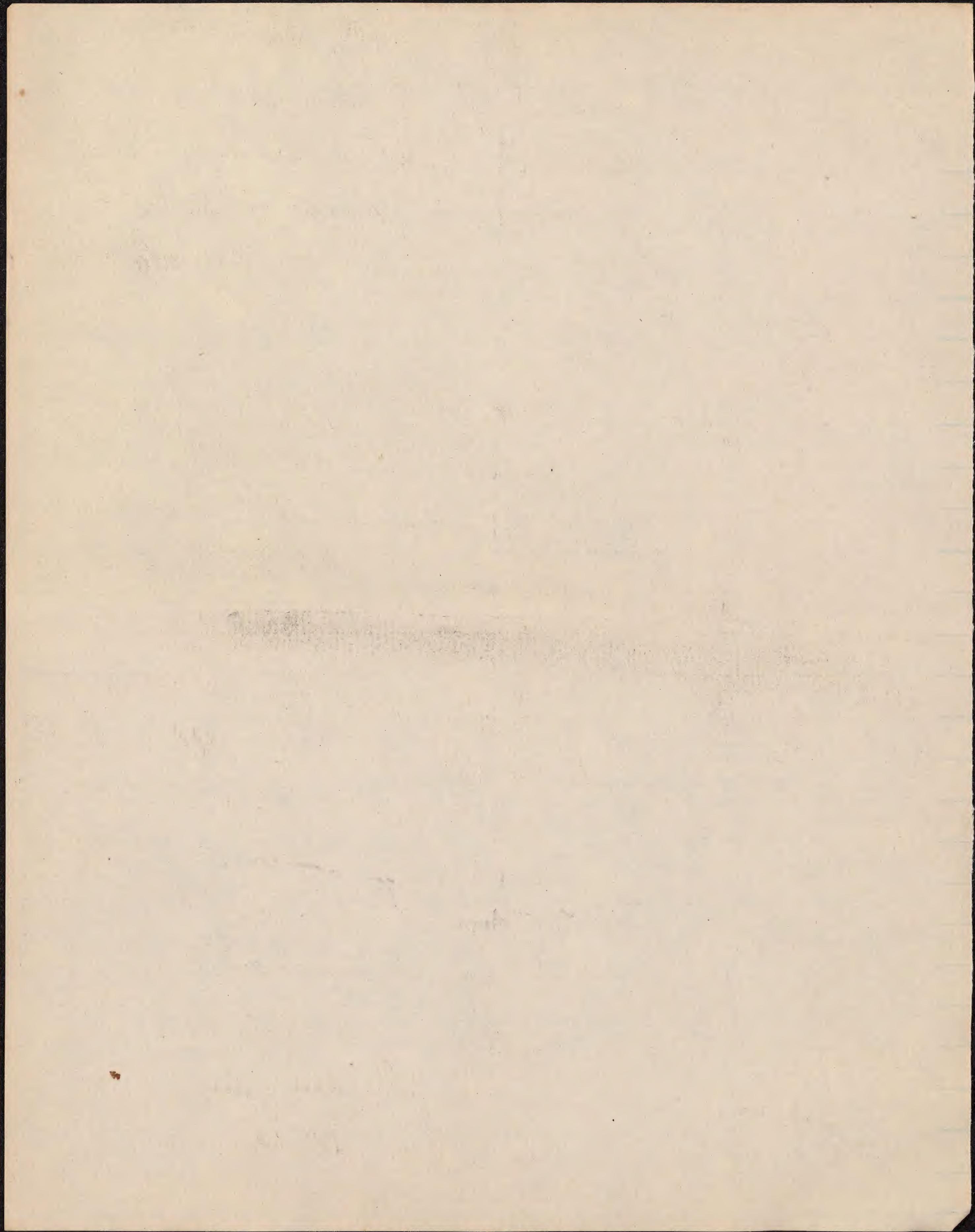


(20)

We have seen that Jenner's first successful vaccination from one human being to another was performed in 1796. Through Dr Waterhouse of Cambridge, Massachusetts, it was introduced into America in 1799; by De Caro of Vienna, into Austria, in the same year; into France and Spain, in 1800; Italy, Russia, Denmark and Sweden, in 1801; India, ~~with~~ ^{to the East,} returning ~~with~~ ^{usurious} more than ^{interest} ~~interest~~ ⁱⁿ the ~~the~~ gift of inoculation, in 1802.

President

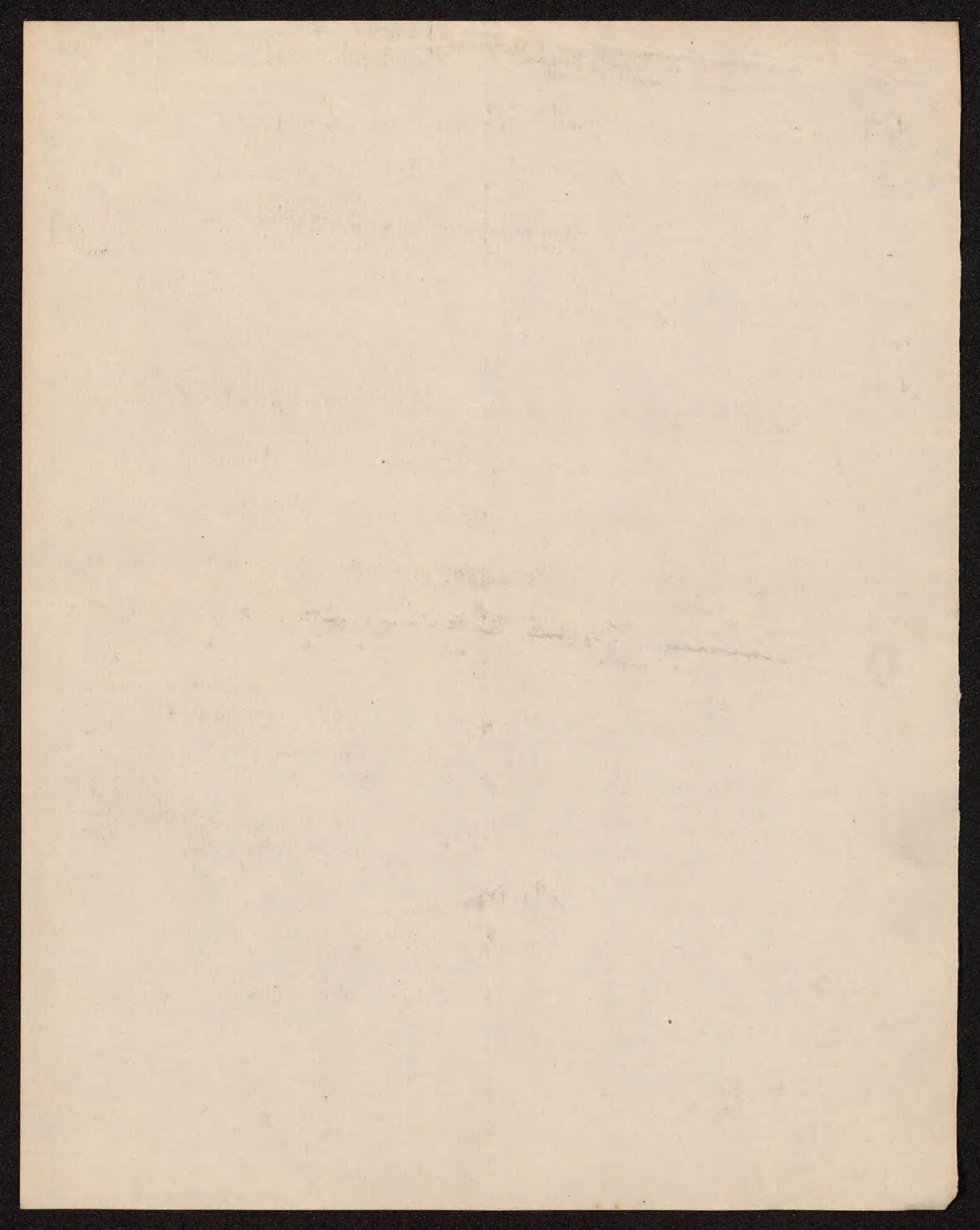
In the United States, Thomas Jefferson took a strong interest in the promulgation of vaccination; so did John Adams and John Quincy Adams and other leading men. But the profession was not altogether prompt in adopting it. In 1801, Dr Waterhouse wrote that he had given the virus in vain to most of the principal physicians of Boston and its vicinity; and that not a single case of vaccination had yet occurred in Philadelphia. In our city, he was told that "the leading physician", whose name is not ~~known~~



given, ~~he~~ "thought it too beastly and indecent (21)
for polished society!" In the very next year, how-
ever, we are told that Dr Rush of this city had
come out full and strong in praise of the practice,
and had published an eloquent lecture upon
~~W^t G^tts~~ discovery.

Honors and attentions now began to
pour in upon Jenner. ^{besied with correspondence, and} He was made member
or associate ^{mostly} of all the learned Societies of Europe,
and of the American Academy of Arts and Sciences.
~~Academy of Natural Science~~

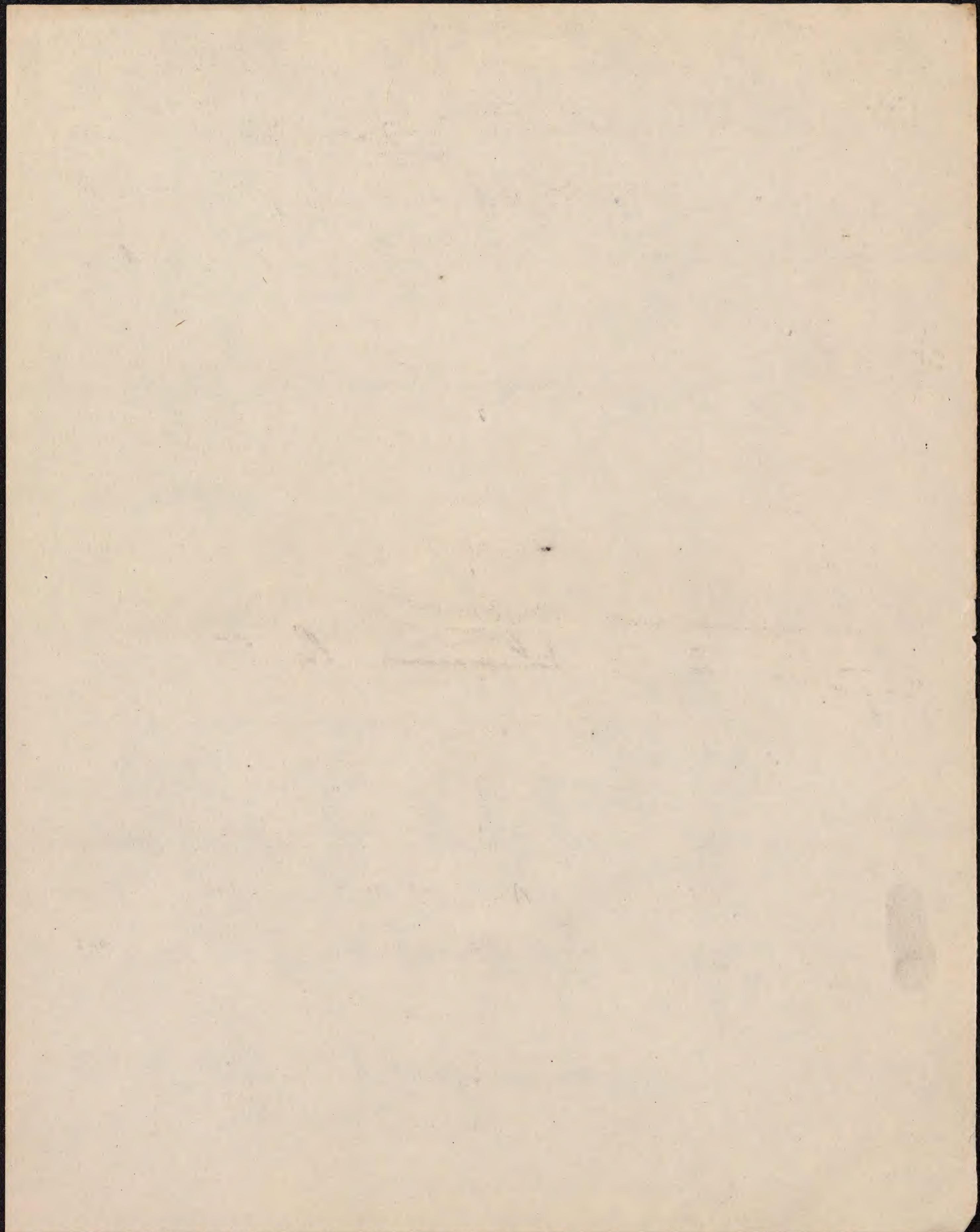
The Empress dowager of Russia sent him an autograph
letter and a diamond ring. In 1802, after a scrupu-
lously careful inquiry into the merits of the case, Parlia-
ment voted him an honorarium of £10,000; which many
thought to be much too small a sum; as he had
given up practice and spent a great deal in
establishing vaccination. Later, an additional grant of
\$20,000 was accorded. In the same year, 1802,
the Royal Jennerian Institution was founded,
with the King and Queen of England as patron and patroness,



the Prince of Wales and 3 Royal Dukes (22)

vice-patrons, and the Duke of Bedford President; with any number of noblemen as vice presidents. The Spanish Government fitted out an expedition to convey vaccination to all the distant ~~colonial~~ ^{possessions} of Spain.* But it was by no means all smooth sailing yet with Jenner. He had bitter open enemies, and treacherous friends. Some of the former ~~had~~ denounced the new practice, as tending to convert human beings into beasts. Proclamation had already been condemned publicly by one of the clergy, as no new art, because Job had been inoculated by the Devil. Irmann of Frankfort went farther, and tried to prove by the Scriptures and the fathers of the Church, that vaccine was nothing less than Antichrist. More plausible than these were the efforts of those who endeavored to deprive Jenner of his due credit by asserting other previous discoverers of vaccination. Such were named as existing both in

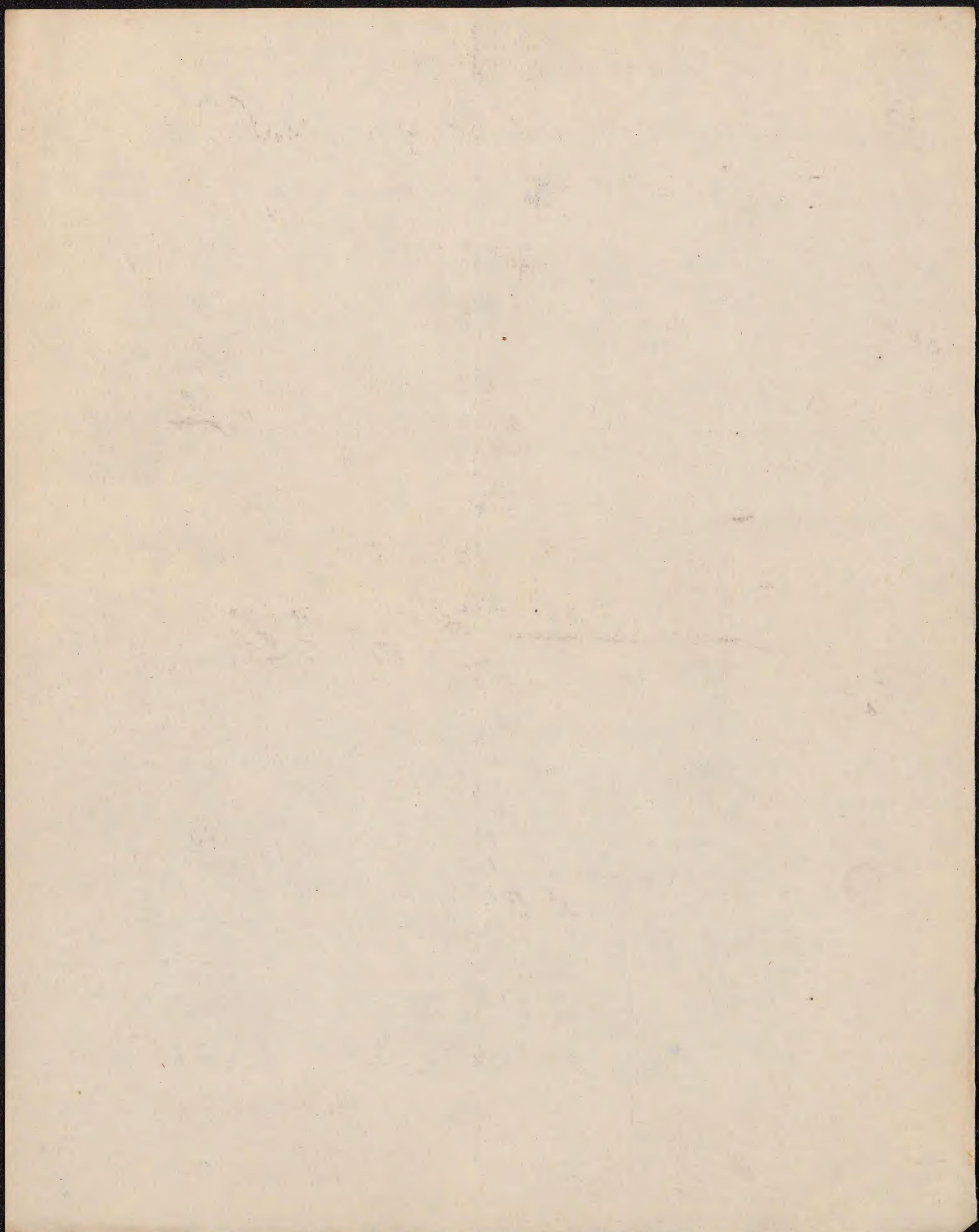
* It had on board, under charge of Dr Balmis, Surgeon extraordinary to the King, 22 children, who had never had small-pox, selected for the preservation of the vaccine fluid, by transmitting it from one to another during the voyage.



(Pearson)
(Rabaut of Montpellier)

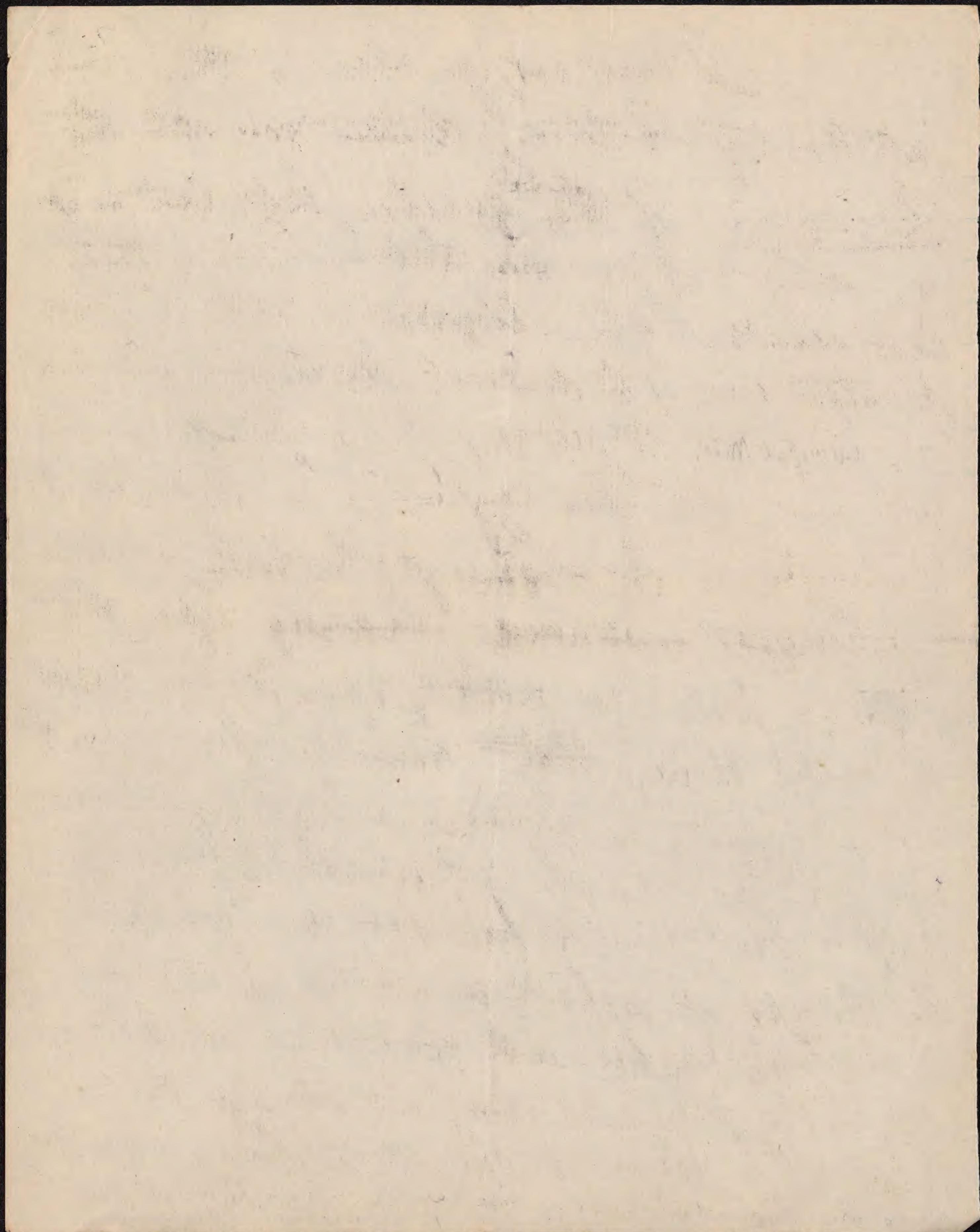
England and France, - and an interpolation
was actually made ⁱⁿ ~~in~~ ^{an} copy of ~~an~~ old
Brahminical writings, to make it appear that
the practice had been known in ancient
India!

But, some of the seeming friends of
vaccination gave Jenner rather the ~~greatest~~ trouble.
They adopted ~~it~~ without taking pains to inform
themselves of all the facts and precautions essential
to it. Matter was sent out, in large amounts, by
two well known physicians, from the small-
pox hospital of London, - in which actually the
virus of varicella was mingled with, and sometimes
substituted for, that of the vaccine affection. It was
no wonder that one medical man wrote to Jenner
that his patients got the vaccinia in the con-
fluent way! It required incessant attention, and vast
patience and labor, from Dr Jenner, to prevent such
~~fatal~~ practical mistakes from ruining the credit of his
discovery at the ^{very} start. Never did any fact

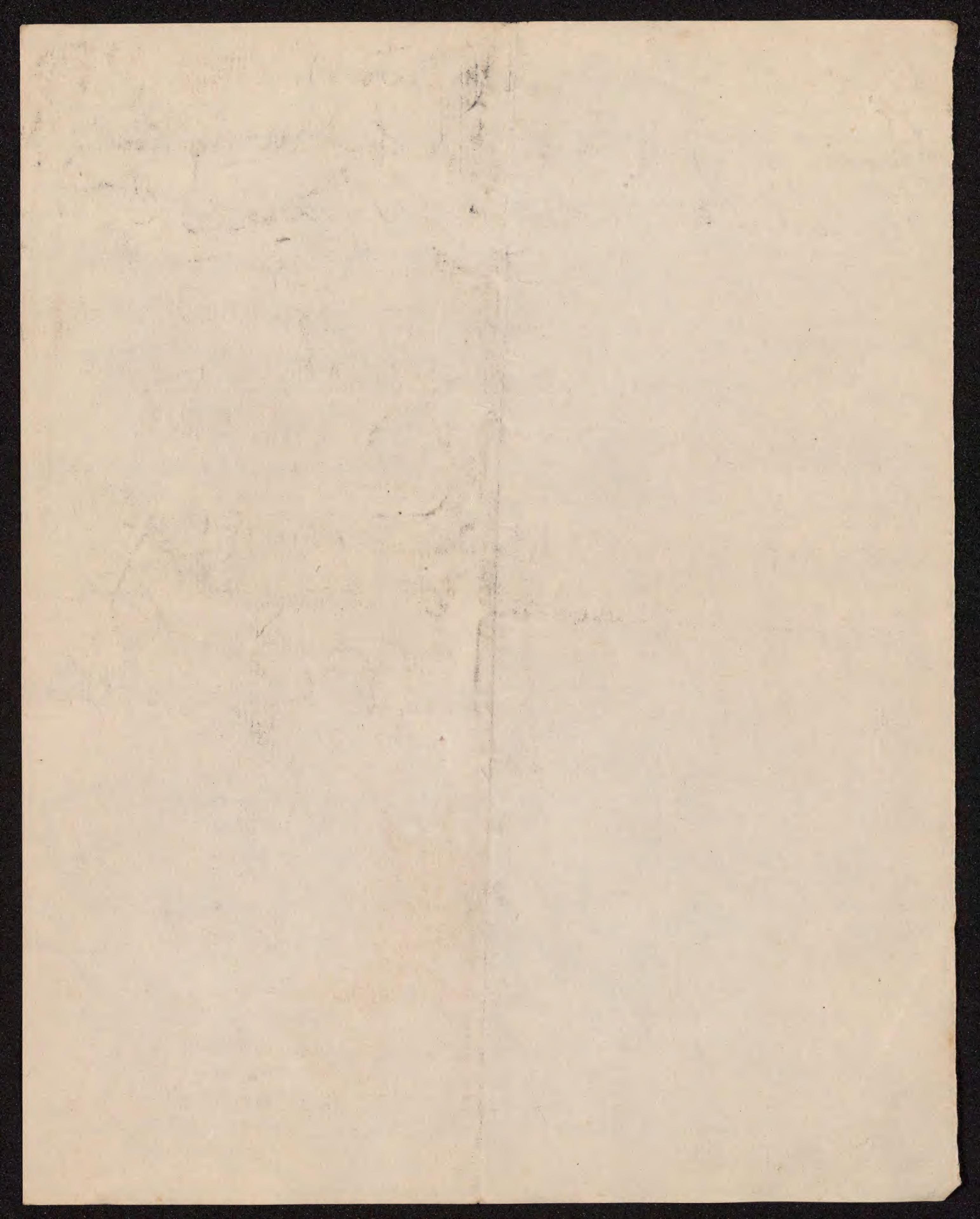


asserted in inductive Science pass
through a more searching ordeal of ~~inquisition~~⁽²⁴⁾
in every way, than this.

And are we ~~not~~ to be told, to-day, - that
it is all a delusion? Have Jenner's labors, and
his wonderful genius, existed, after all, but in vain?
Two ~~Medical~~ ^{Physicians} in New York, one of them a surgeon
of considerable reputation, ^{in 1869} ~~last year~~ addressed
a letter to the Board of Health, protesting against
compulsory vaccination. And a magazine of a
popular character, called Good Health, contrib-
uted to by a number of respectable ^{of this country,} Physicians,
contained, ^{in 1869 or 70} (some months since), an article by Dr
Both, of Boston, in which it is said that all
the scientific men of Europe are now opposed
to vaccination; and that the diminution of small-
pox, which is admitted, must be ascribed to
a spontaneous change in the human constitu-
tion and better observance of the laws of health!
An anti-vaccination League has been started in England, including 2,000,000
members of the medical profession.



I must not, (gentlemen), in this (25)
(introductory) Lecture, detain you with the
Discussion of this ^{whole} question, important as it
is. Let me just say that I believe these
last assertions ~~to be~~ the altogether untrue. The ablest
scientific men, of the Medical profession, who alone
are competent to judge, both in Europe and
America, retain their confidence in the value of
vaccination. Dr. Lomes of New York, a man
of the largest experience bearing upon the
subject, a first class authority upon it, has ~~written~~
abundantly shown, that vaccination from arm to
arm, according to Jenner's rules, ^{best done}
with 8th day lymph, is ^{as reliable as} ^{an attack of} smallpox
itself to give immunity from that disease; that
the danger of syphilitic inoculation in this way
is absolutely null, with that care which every
respectable physician may and always does
take; and ~~that~~ to substitute bovine vaccination
directly from the cow, as a general rule, for



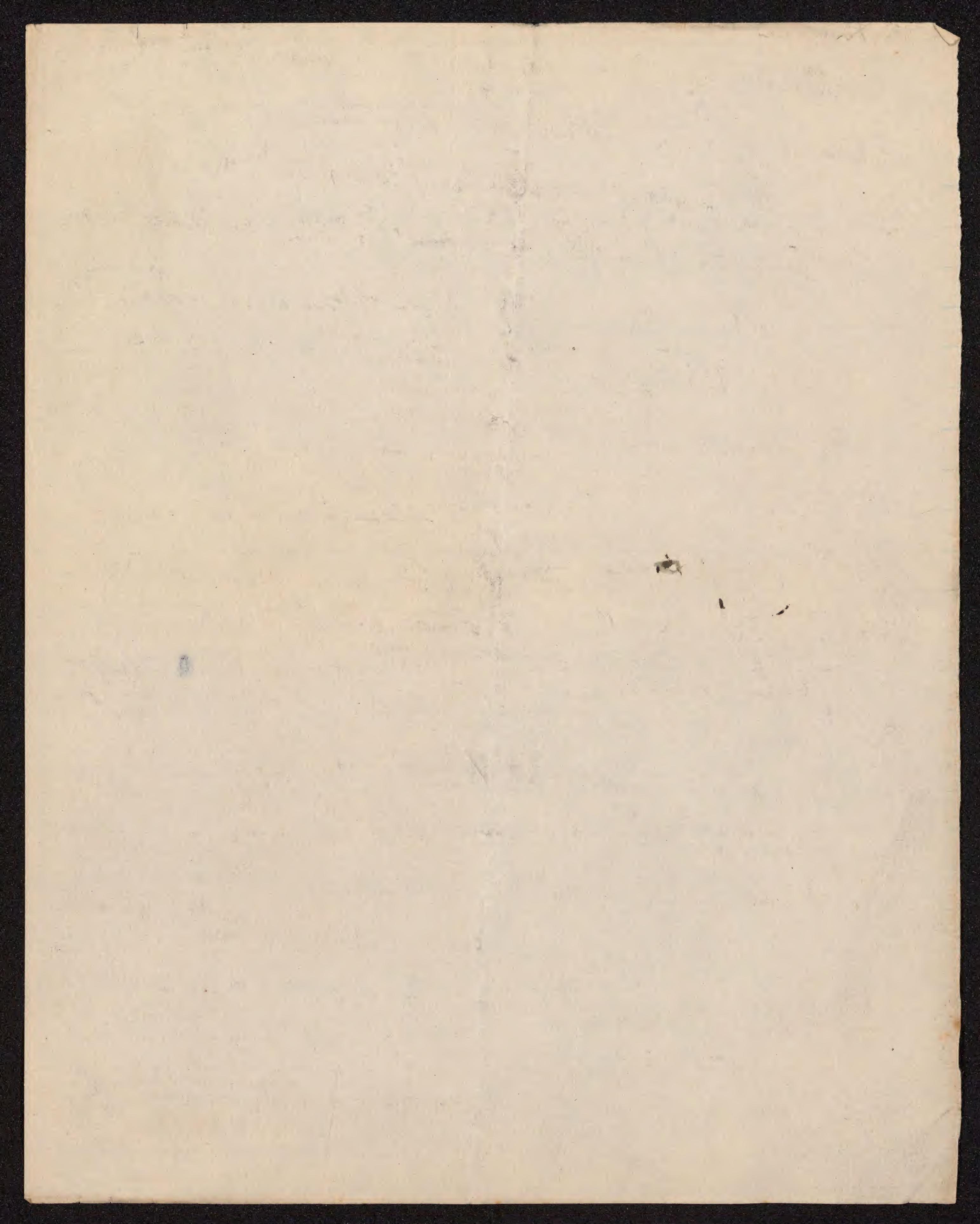
the use of the virus taken from healthy ~~and~~⁽²⁵⁾ human subjects, is to substitute uncertainty for certainty, without any corresponding advantage; however suitable it may be, now and then, to introduce good fresh Cowpox matter into use for renewal of its ~~strength~~. I believe that, with proper care and skill, it may pass through many human systems without any loss whatever of its Prophylactic Power; and that, with revaccination to secure its full effects, we might trample out small-pox, every where, if only we could vaccinate every child that is born into the world.

Pardon me for troubling you here with a very few figures; some of which have been lost sight of, as they are as old as the time of Jenner. Before that period, it was estimated that 1 in 16 of all born in Europe died of the small-pox. In Russia, the imperial physician ~~stated~~ that every 7th child born died of that

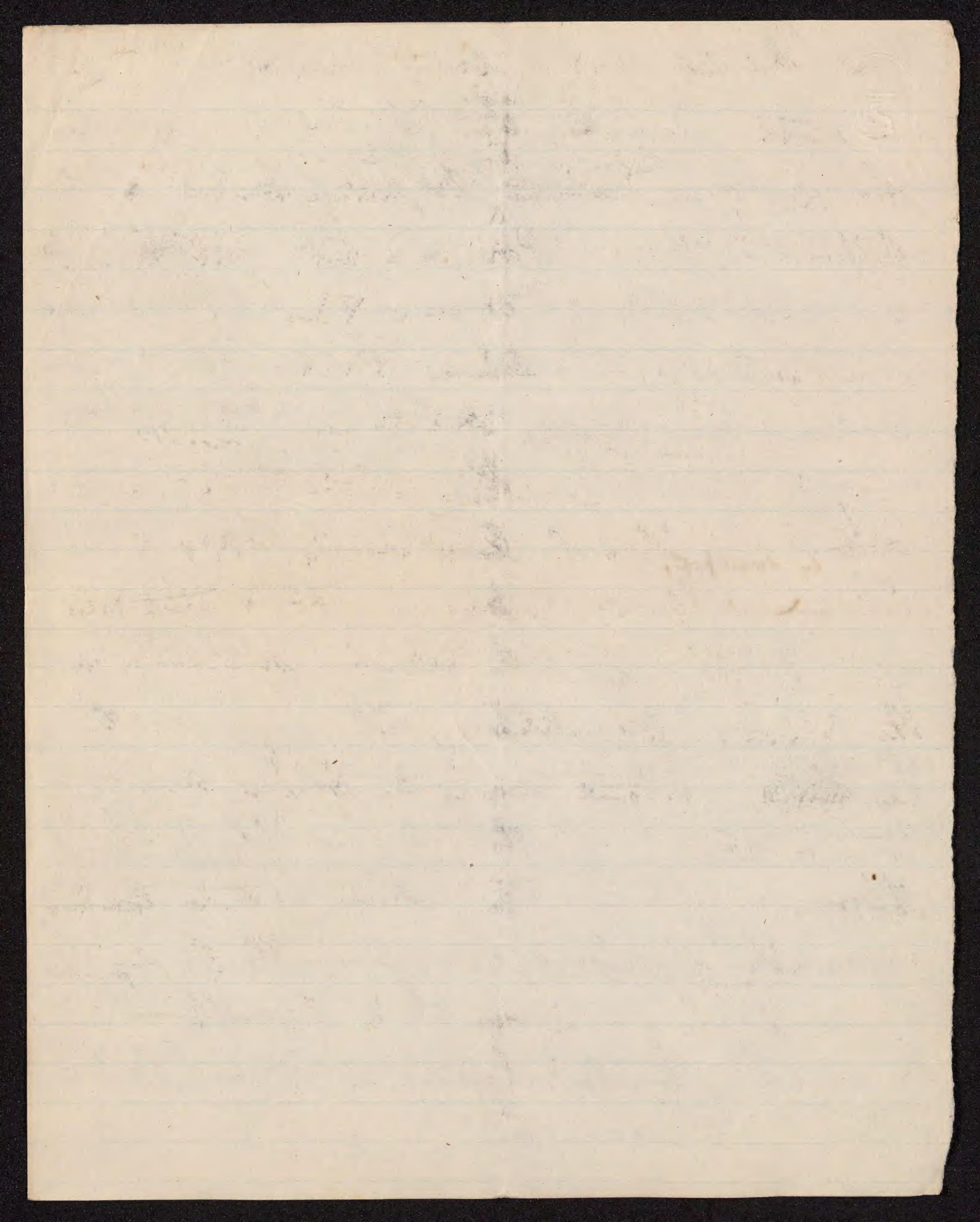
2 millions have been destroyed by it, in the Russian empire, in a single year.
Disease. In Great Britain and Ireland, (27)

45000 annually was its mortality; in all Europe, 210,000^{was}, an average number for a year; in the world altogether, about 600,000. Now, what did vaccination do? Let us take a few examples.

Vienna and Milan formerly had even more deaths from smallpox than London. But, in 1812, about 10 years after vaccination had been introduced upon the Continent, it was officially reported that Vienna had been free from the pest for 5 years, and Milan for 8 years. So far as this exemption^{may} have been less complete since, it is doubtless owing, there as elsewhere, not to the failure of vaccination to protect, but to its failing, through neglect, to be performed. In Peyley, where once the very appearance of smallpox caused whole villages to be abandoned, from 1802 vigilant superintendence secured through vaccination, and by 1808 variola was entirely extirpated from the island. So it was with Sweden and Denmark; which became free from it, and



continued so far nearly 20 years. How (28) absurd it is to talk of this being due to a change in the human constitution, or to better knowledge of the laws of health, is shown by the constant return of the same scourge, whenever vaccination is neglected; by the wide destructiveness of cholera in the same localities over and over again ^{since 1870}; and by the destruction, ^{within this} very ~~year~~ of the Indians of Montana in our West ^{by smallpox}, 500 out of a thousand in a few months. Whole tribes of Savages have thus been swept from the face of the earth by smallpox. The French Minister of the Interior, in 1811, gave it as his opinion that vaccination had already been shown to save 150,000 lives annually to the empire. Take, again, on a smaller scale, the instance of particular institutions. The British Royal Military Asylum for the children of Soldiers, containing more than 1100 children, with enforced vaccination, lost, from 1803 to 1811, only one child from smallpox; this



one having accepted being vaccinated by (29)
causing it to be supposed
mistaken information that it had been done.
London Foundling Hospital, the
So, also, it was with the Polytechnic School and the
different Colleges of Paris) and like institutions. It
is very satisfactory to confirm these by much more
recent evidences of a similar kind. In a book
Published (in 1869) Dr Cameron, Health Offi-
cer of the City of Dublin) states that, while
Ireland had formerly lost nearly 6000 lives
in ten years by smallpox, in 1868 there was
not a single case in the island. Dr Austie, in
the London Practitioners, within a few months
^{of the date of the same publication} mentioned nearly the same state of
~~things~~ mentioned nearly the same state of
things as existing in Scotland; — and all from
thorough vaccination. Neither of those countries,
and especially not Ireland, can possibly be supposed
to owe such an immunity to favorable circum-
stances among the population, or to special observance
of the Laws of Health.

Of Vaccinations with Wurttemberg army, over
14 thousand men —

for each 1000 —

Perfect success -	380
Moderate success -	260
No success -	400

In five years after, though exposed to 5 different
importations of small pox, among all these soldiers
there occurred but one case of varioloid.

May not so-called "unsuccessful" vaccina-
tions still affect the system? I think so. (R. Taylor's case)

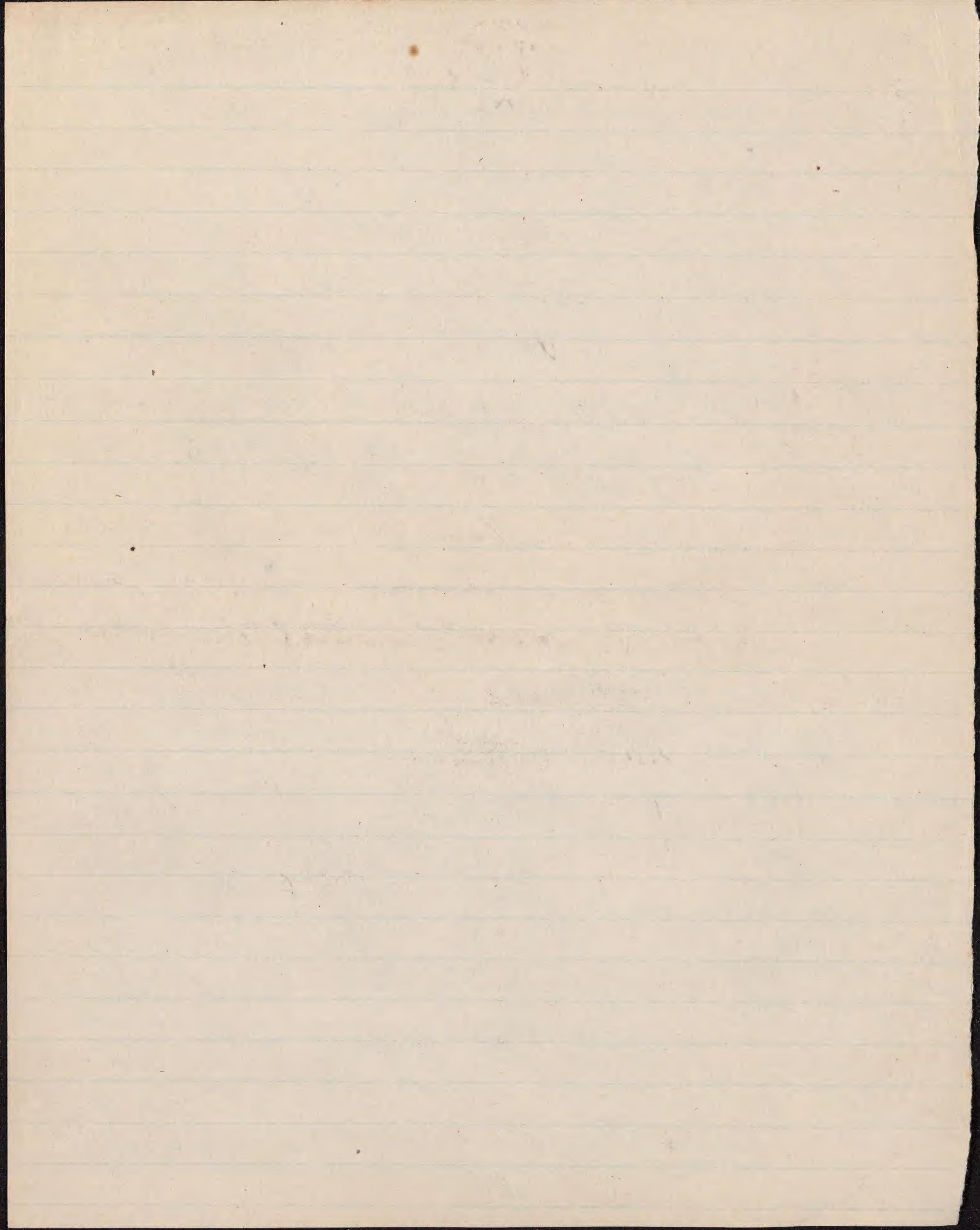
1. History of Vaccination
2. What is Vacc.
3. Theory of its action.
4. The operation.
5. Courses of Vaccination.
6. Bovine Vacc.

 1. original
 2. revacc.
 3. various

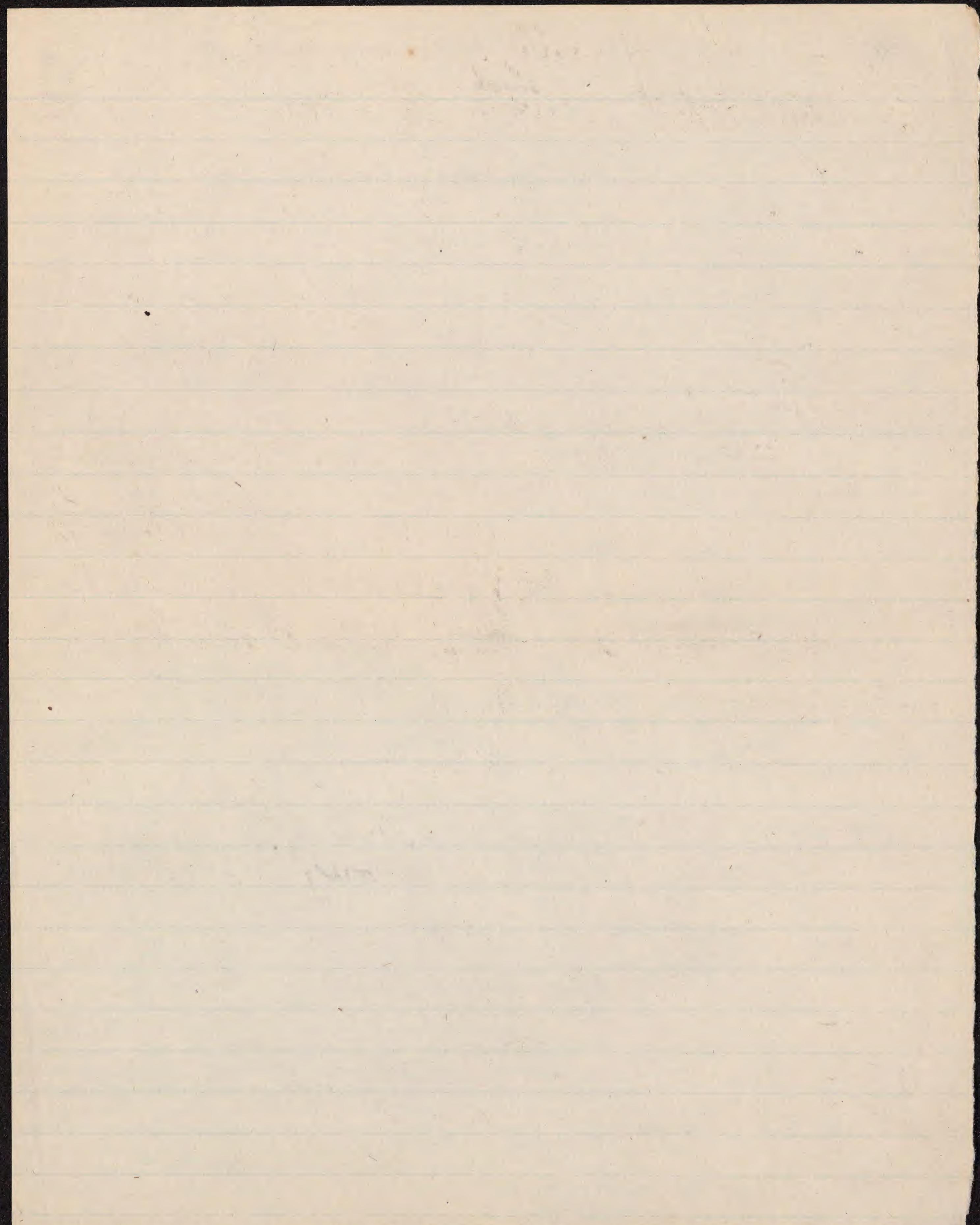
7. Vaccination syphils, &c.
8. Revaccination.

9 failures, —
yet varioloid
afterwards.

I have ~~carried~~ carried ³⁰ you, thus, gentlemen,
over a somewhat long, and it may be, wearisome
account of a very familiar character and
~~discovery~~ discovery: why was it? It was my wish
to illustrate, by this great example, what
Science, ^{what} the trained, cautious, observant, experi-
mental and reflective scientific mind, may do
for Medicine. Has every thing been now done
that may ever be accomplished? Are there ^{to be} no
more discoveries, no more triumphs? I do not be-
lieve it. Medicine abounds in problems, as truly
as California ^{does} in rocks and sand of gold.
What is wanting is, the fitted minds and hands
for working in these mines; the metal is there, surely,
~~fitting~~ to reward the worker. And again I
urge, that the kind of training most useful, in prepa-
ration ~~for~~ not only for Medical discovery, but for
medical thought, observation and practice, is the
naturalistic training. Have we not abundant illus-

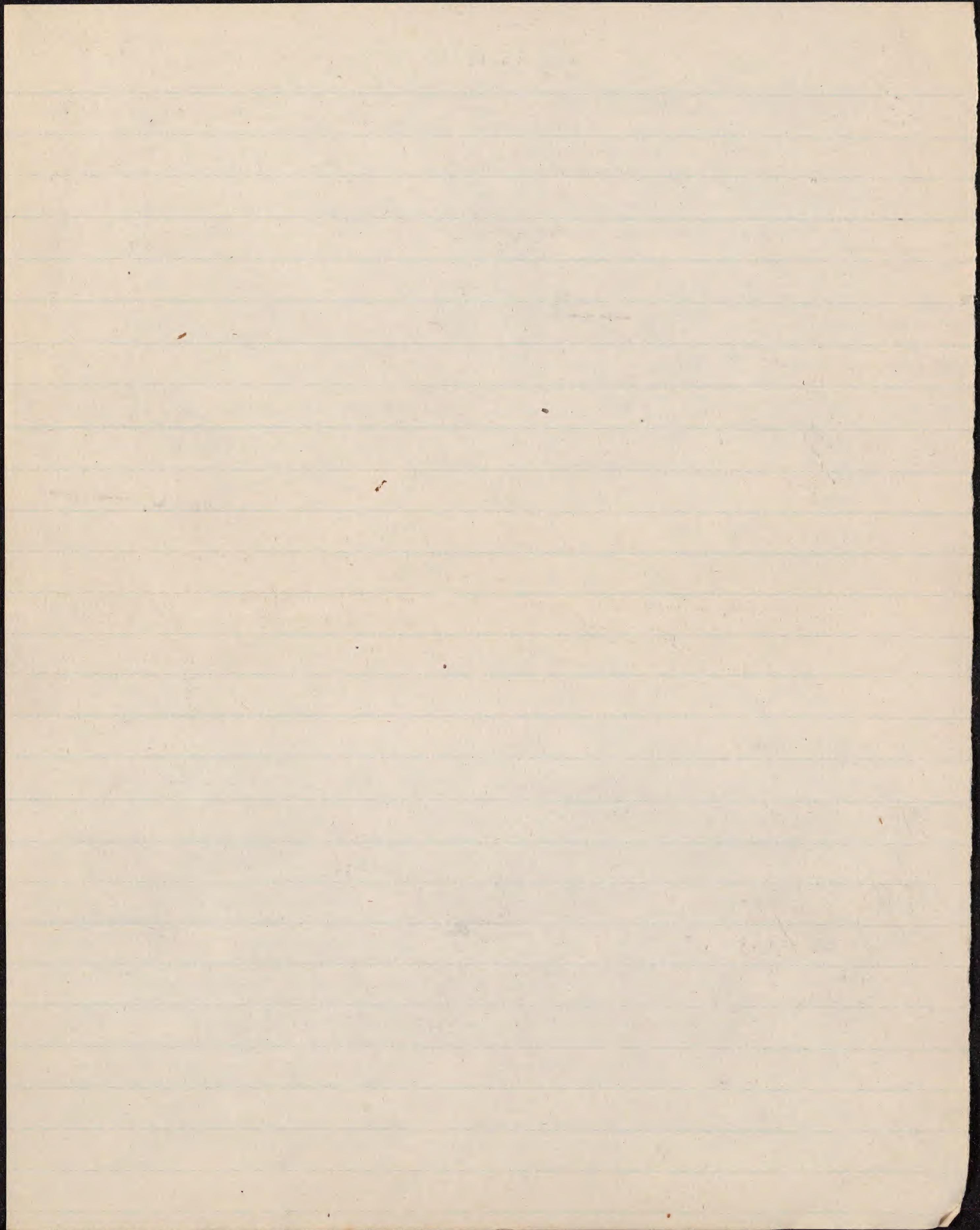


trations, in medical and scientific biography and (31)
history, of the closely kindred nature of
these two pursuits, of medicine and
natural science? Not to speak again of
John Hunter, or of Larrey of France, surgeon
and ~~naturalist~~ naturalist, here in Philadelphia
none should ever forget Eodman, the naturalist-
physician, — nor Samuel George Morton,
whose superiors in either ^{science or practice} department were hardly to
be found at home or abroad. Science has
even ^{now} some of its own most beautiful discoveries to
physicians. Who ~~was~~ first distinctly announced
the now universally ~~accepted~~ accepted doctrine
of the sexes of flowering plants? It was Camerar-
ius, a physician of Tübingen in ~~Germany~~ Württemberg. Who, before
either Hales, himself a physician, or de Candolle, made
clear the fact of the circulation of the sap in plants?
Claude Perrault, physician, architect and naturalist.
So, also, the truly animal nature of the coral-builders
was first made out by Peysonnel, a ~~physician~~ phys-
ician, against the ~~whole~~ contradiction of the French Acad-



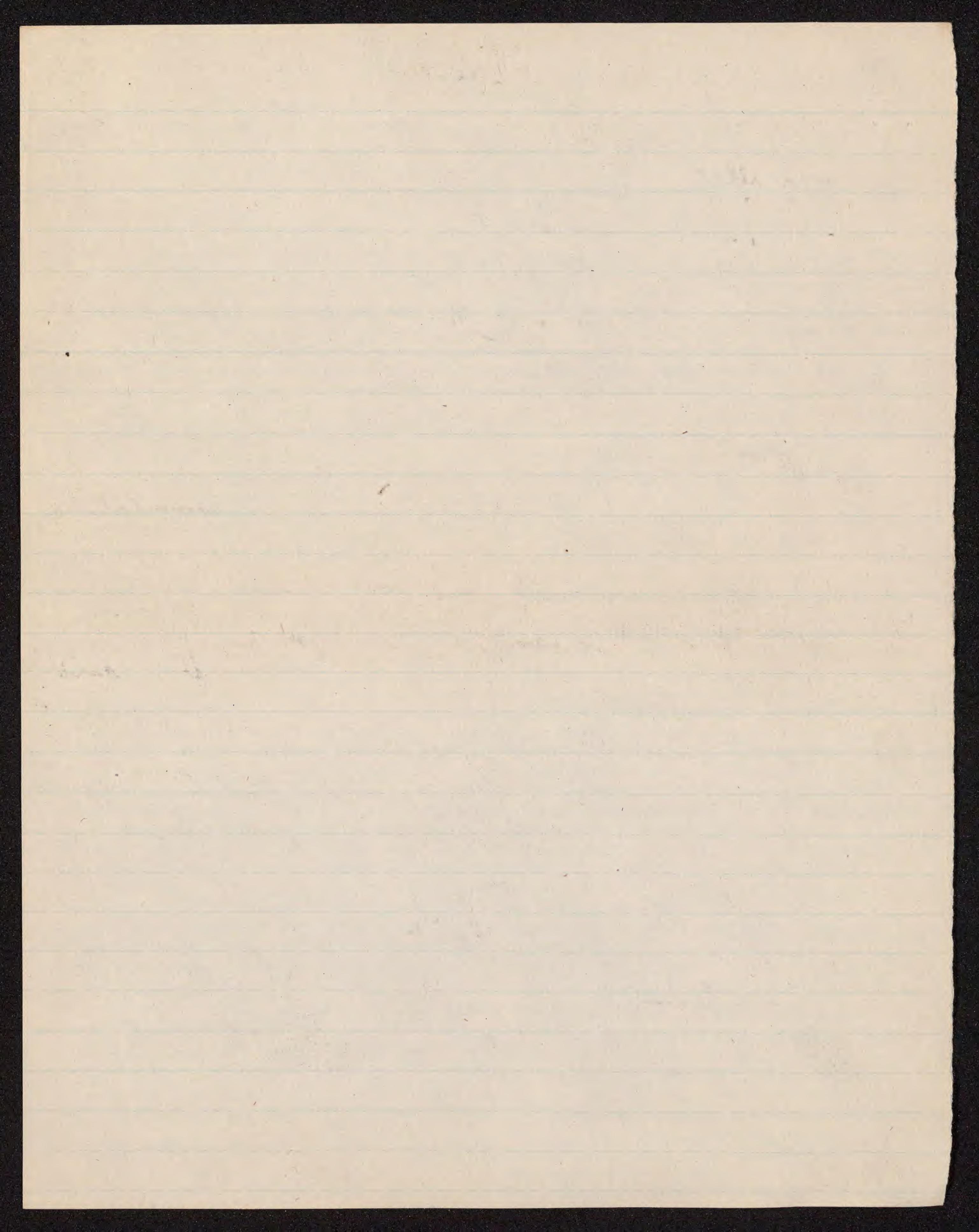
-easy, and, more than all, of Barnard de Jussieu, (32) who ~~had~~ maintained that they were plants.

Perhaps it may be asked, then, what is our ideal of the right kind of training and preparation for ~~a~~^{really} educated physician. Ought we, in this late day, to demand a standard lower than that of Hippocrates? If five years were not ~~too~~ too much then, can less be entirely enough now? But it is not a question merely ~~merely~~ of time, or of quantity; it cannot be so measured. Admitting ^{also} that some things very desirable are not altogether possible; still, it is well and useful to know what is most desirable. Under this view, it may be now said, that a course of study preparatory for medical scholarship and professional practice ought to be progressive. It should have, at its foundation, a broad and strong basement of natural knowledge. In this ought to be included the elements at least of Physics and Mechanics and general chemistry. On these should be built

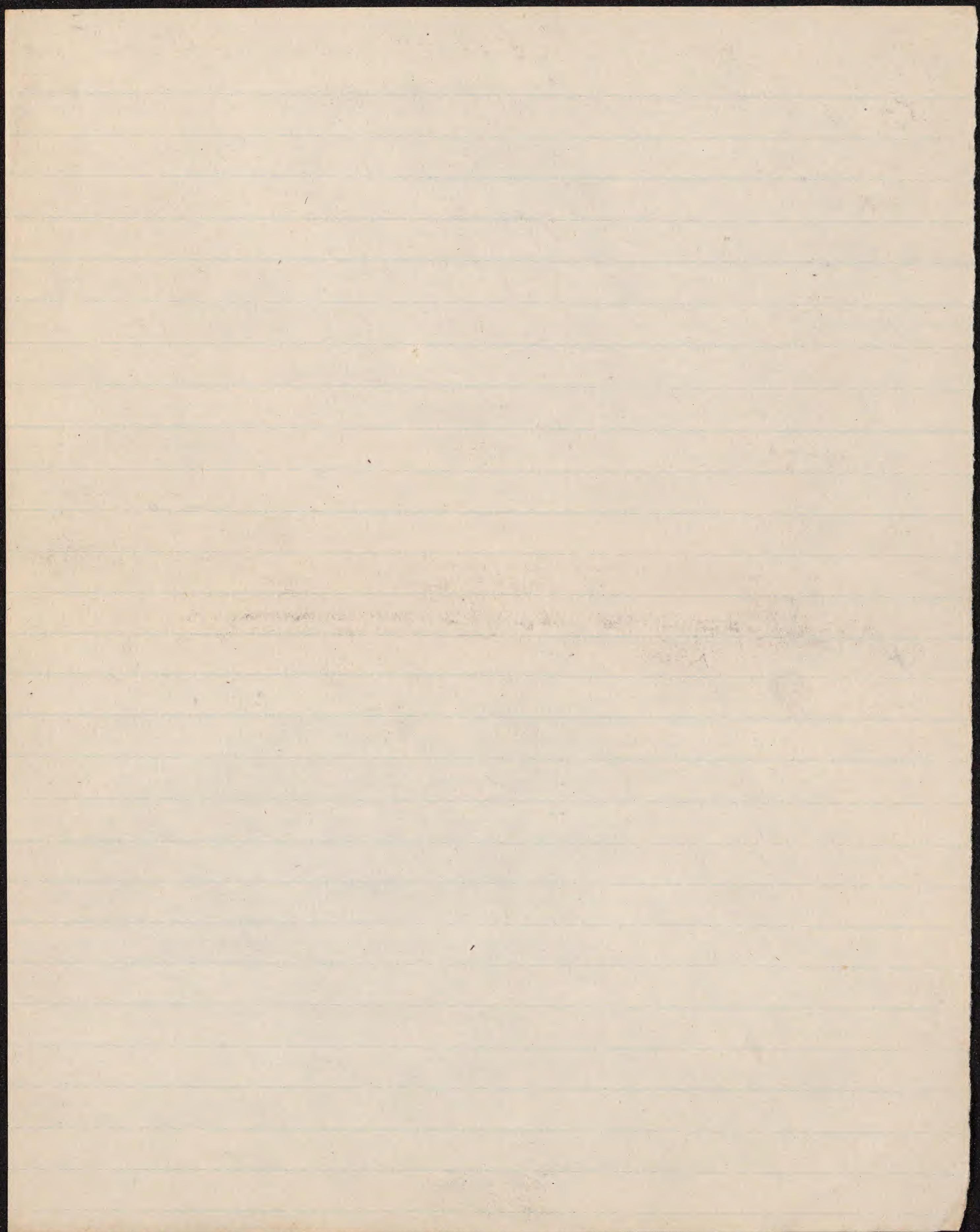


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Mineralogy, botany, and comparative anatomy.
The claims of these branches have been and are
so amply ^{and satisfactorily} illustrated here by my colleagues,
that it is not required for me to dwell
upon them. Incidentally it may be mentioned
that, in the University of Edinburgh and in
those of Germany, a thesis on a subject
connected with Comparative Anatomy is now
accepted for a medical degree. Next
to these studies in a progressive order,
must come those with which some, ~~perhaps~~
we may have to say many, medical students
begin; Human Anatomy, and Human and Comparative
Physiology. Then will follow ~~the~~ General Pathology,
~~and~~ ~~the~~ Therapeutics, and Materia Medica;
& Personal and Public Hygiene. Upon such a
structure, well laid and strongly though compactly
built, may be superimposed all the so-called pro-
fessional branches; Practice of Medicine, didactic and
clinical; Principles and Practice of Surgery; and the

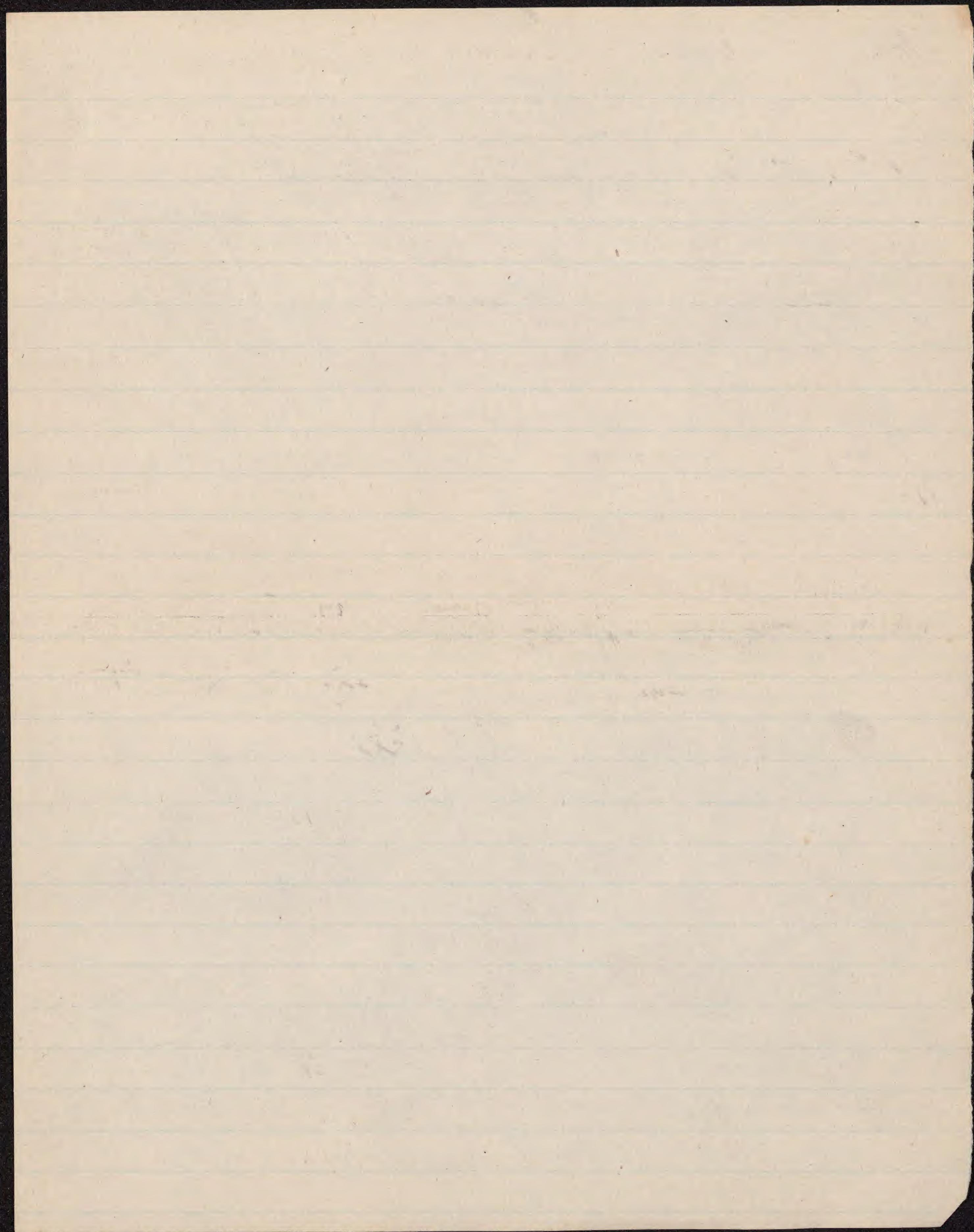


Science and Art of Obstetrics. But no plan (34)
of study for the physician can yet be complete,
without the extremely important addition of the
Principles of Medical Jurisprudence and
Toxicology. And the medical man is not
wise, who now-a-days fails to acquaint him-
self, practically as well as by books and
lectures, with all the modern instrumentalities,
employed for diagnosis, and for minor medicine
and surgery ^{chemical analysis} in the microscope, laryngoscope, ophthalmos-
cope, sphygmograph, thermometry, the atomizer, and
the rest. For the science and art of medicine
and surgery, like the other sciences and arts of
our age, are now ~~obscure~~ industriously inven-
tive; and their inventions must be learned and utilized.
I am not ready to admit that, as a very dis-
tinguished Professor in another institution is
quoted as recently saying, ~~that~~ the course of
medical instruction in this city has not advanced
an inch in the last half century. My recollec-

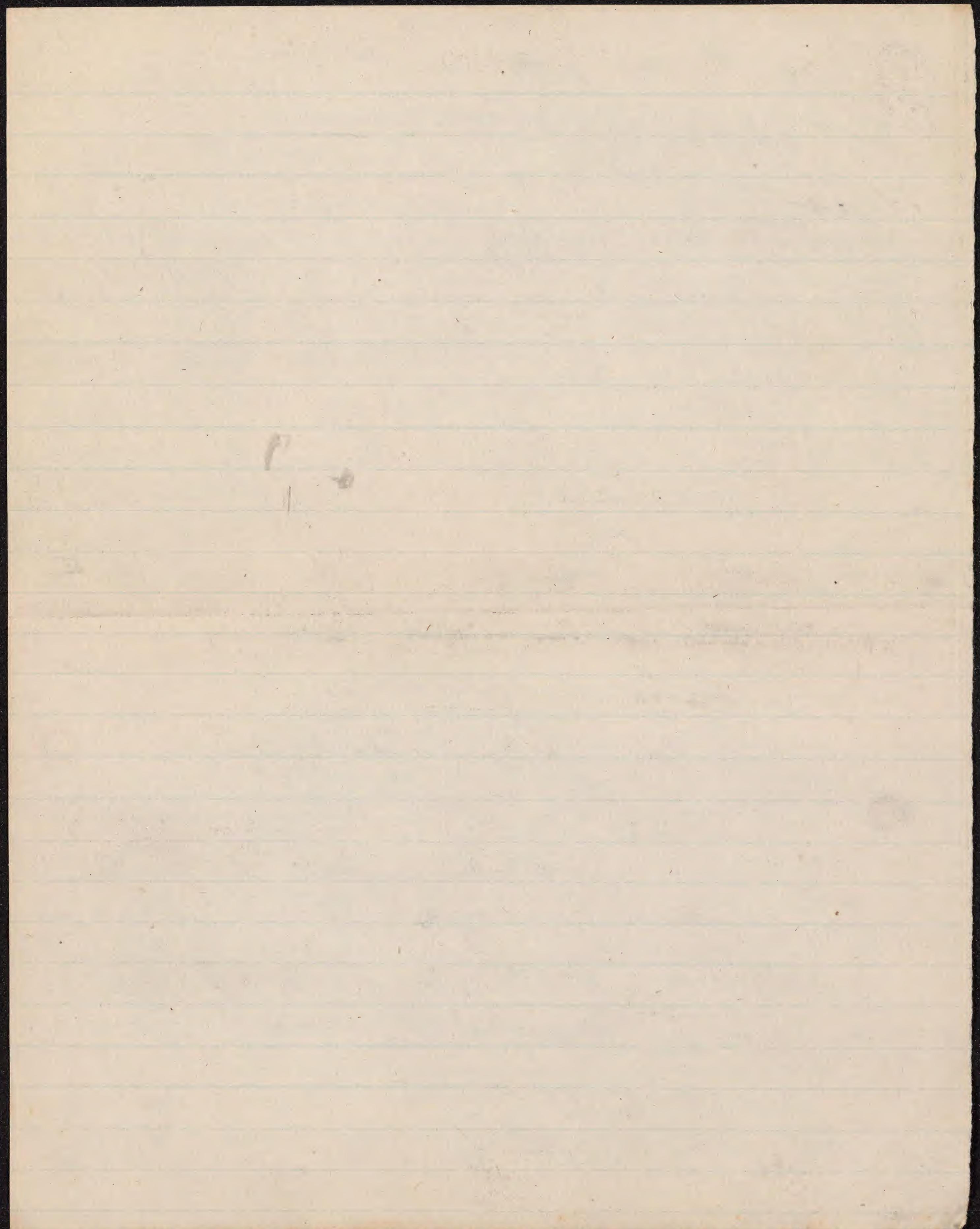


-tion of it goes back but 30 years. But 35
I think too highly of the progressiveness of that
~~past~~ learned ^{own} gentleman's mind; too much of
the ability and sagacity of those of his school;
and we know too much of the extension of the
teachings of and around this University, in
much less than 50 years, to allow for a moment
that such an allegation is correct. I have
said ^{that} around as well as in it, there has been
and is continuous progress; for I trust that ~~the~~
~~other~~ ~~high~~ ~~as well as~~ ^{all} ~~lower~~ ^{connected} ^{with} ~~authority~~ in this insti-
-tution may ~~ever~~ ^{ever} be ready to ~~be~~ give cordial wel-
come and do full honor to ~~the~~ noble and laborious
corps of private and associated teachers who sur-
-round this maternal centre, and ^{who} contribute so
essentially to the success of medical instruction here.

Now, gentlemen, in what has just been said
of a course of full medical study, a large prospect
has been opened. Who is sufficient for it all?
No 3 years' course can accomplish it. What then?
I can but add my ~~feeble~~ feeble voice to the

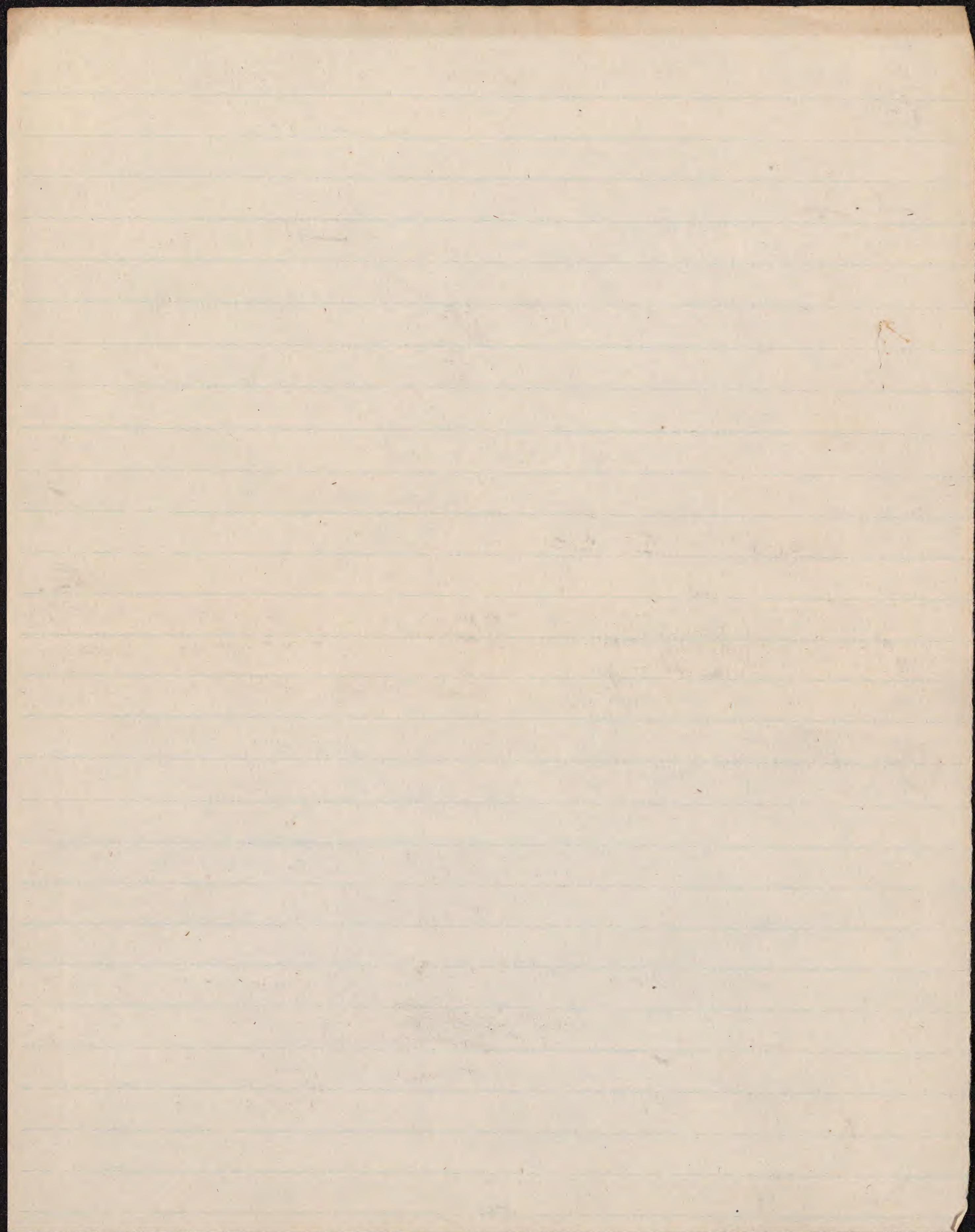


general demand, growing increasingly loud every year, for a voluntary extension of the time, by agreement between the Students and the Colleges. And a very important facilitation of the full preparation required, I believe it will be, to adopt a really progressive plan, such as is advocated by Dr Parkes, Professor of Hygiene in the Army Medical School at Netley, England. By this, the hard work of the course is broken in two, by a system of successive examinations. At the end of the first two of the 4 years prescribed, the student may be examined upon the more fundamental or primary branches, as Anatomy, physiology, chemistry & perhaps Material Medica. Getting then his certificate of proficiency upon these, he may devote the greater part of his attention in the following two years to the full study of the more practical branches,



It seems to me obvious that such a (37)
plan must render the whole work
lighter, as well as more satisfactory.

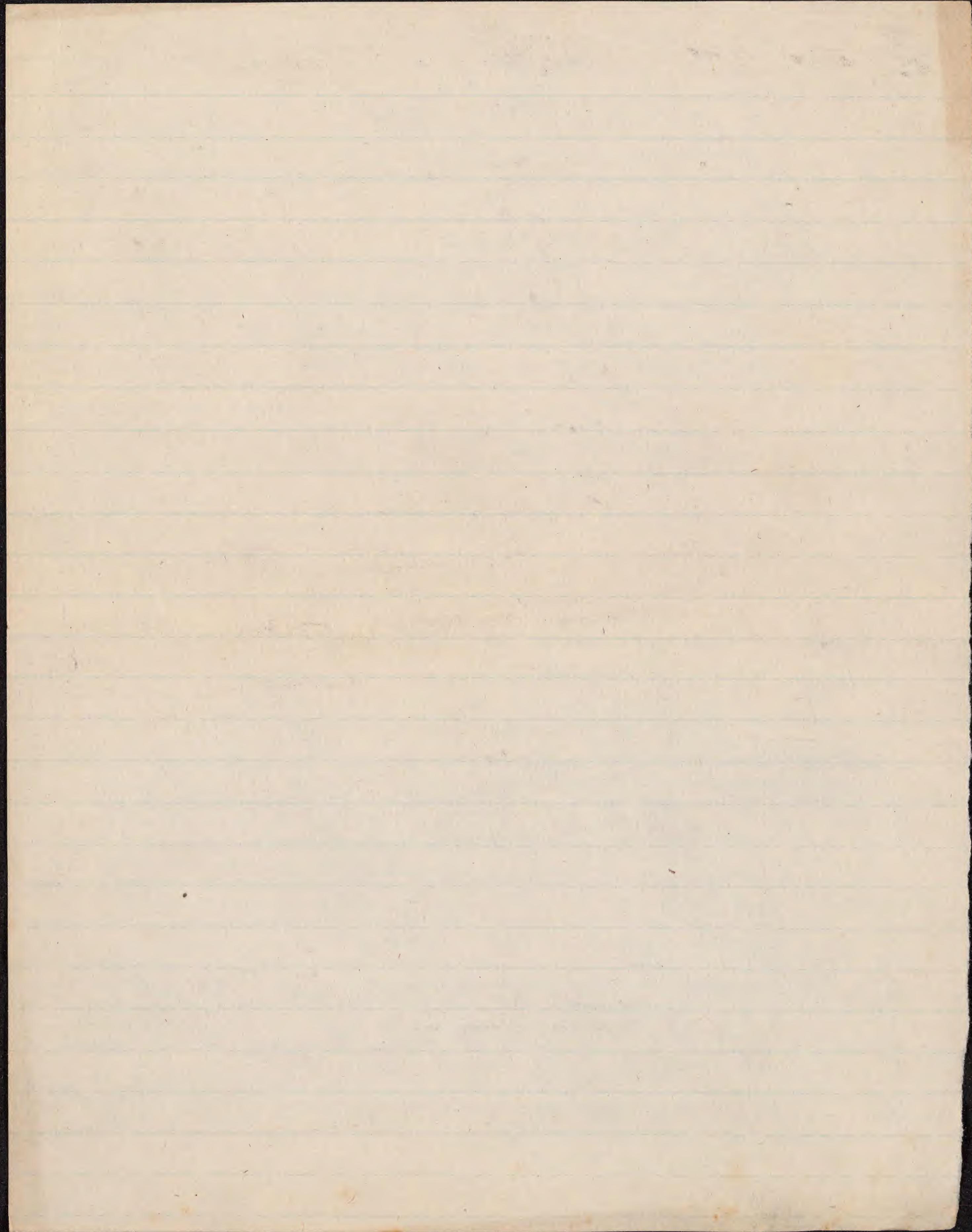
Of course it is yet true, that no
man can learn everything; and, also, that
no scientific drilling can, alone, make a
good physician. ~~This~~ ^{requires} more and other things
than ~~that~~ ^{I must be in the man.} As Jevon himself said, — "neither
books, lectures, nor the longest experience are suf-
ficient to store his mind with the indescribable some-
thing a man of our profession should possess." In
this he only followed Bacon, on the subject of
General Science: ~~the instruments et auxiliaries~~, ~~the~~
~~man.~~ ~~and~~ "nec manus nuda nec intellectus sibi
permisus multum valet;" neither the unaided hand
nor the intellect acting alone, can accomplish
much. I have ^{thus} placed before your minds a
high standard; but, whether attainable or not,
must not something like ~~it~~ it be our aim? It does



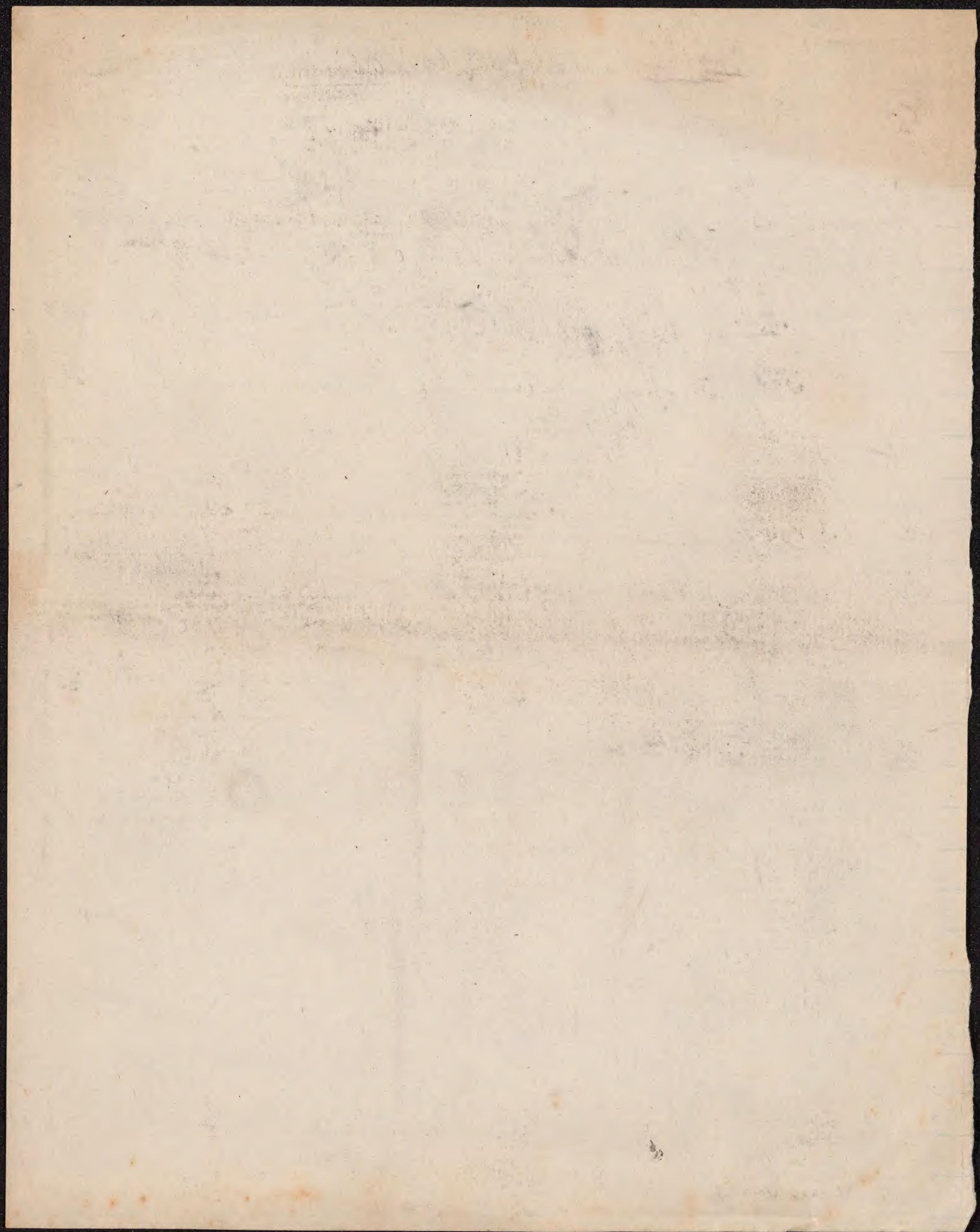
not appear to me to be now altogether ⁽³⁸⁾
a matter of choice, but of necessity.
The times demand it ; self interest requires it ;
the self protection of the professor makes it
imperative. What is the position of the pro-
fessor of Medicine now ? There is no more magic
in it — no ^{more} superstition ^{as} of the Egyptian priest, or ^{the} med-
icine-man of the Indian wigwam, — not even the
Despotic authority of the physician of the last century.
The mystery of Medicine has gone ; what is there
left ? Science, only ; when not that, — nothing. We
must stand and rise by our intellectual super-
iority and resources ; only by these. As some one
has said, the fact that physicians come all the
time in contact with the bodies of men, women and
children, confers a ~~some~~ ^{some} financial association
upon their work ; — somewhat more elevated only, in itself,
than that of the barber, ~~or~~ the shoemaker or tailor.
The difference must be, really intellectual ; — the
Dignity of the vocation arises from its Science, as well

as from the importance of the issues of (39)

life and death with which it is concerned.
Dr Rush observed, that, without science, ours is ^{even} a very humble and ~~and~~ degrading art.
But how familiar to the remark, that the
true place and dignity of the medical cal-
lers, ^{as it is,} are under-rated! In all countries this
is so; in aristocratic societies, ^{abroad,} and in official
rank and position, ^{everywhere} Within the last year, we have
had knowledge of this, in an insult to the whole
profession, in the person of a medical officer of the
navy; against which, no matter how remote from
connection with naval and military affairs, I
would have a protest to go up from every medi-
cal school, medical society, and medical man;
until the voice of remonstrance should compel itself to be
heard. And, with this we find, that in the actions
of the present ^{United States} Congress, the tendency, instead of being
towards an elevation of the rank of medical
officers under government appointment, is towards its further
subordination. May it not then be said, that the profes-
sion must grow more and more intellectual, more dis-



ciplined, more scientific, to oblige that ⁶⁰ recognition to be accorded which does not come of itself? And, an added reason for this is, the occasion for self defense against charlatanism; — in individuals and in systems. It is hardly enough, now, to be called doctor. Doctor of what? From whence? The time may not be far off, when, after the degree of M.D., it may become desirable, and customary, to add the name of the institution by which it was conferred. When that time does come, we may ~~hope~~ and trust that the institution within whose walls I now have the honor to address you, may be ^{very} far from last or least in the grade of value of its honors. Every one who enters the profession of medicine, in ~~whatever~~ of its departments, he may choose or find the sphere of his labors, is bound to do what he can, to uphold its dignity, and to advance its usefulness. At every stage, no matter how early, of his studies, this view should be held before the mind.



Let me, then, conclude ^{to-day,} with some (41) of the words of one of the ~~best~~ most original scientific minds ^{addressed by him to a recent Congress of} ~~on~~ ^{Naturalists and Physicians in Germany.} Virchow; "We, physicians, have been in all times the apostles of peace and conciliation; on the field of battle, the surgeon performs his serious duties toward all, without distinction of persons. But, we manifest ourselves also in the combats of intelligence; and this elevated mission, incumbent upon us ~~to~~ ^{to-day,} to cause our voice to be heard in ~~the~~ ^{the} ~~dictation~~ ^{confer upon} Public ~~affairs~~ interests, - not in giving our aid to the frivolous combinations of diplomacy, but ⁱⁿ teaching ~~the~~ ^{the} ~~friends of the~~ ^{the} State statesmen how they may, ~~over~~ ^{over} the people happiness and health, - the task I dare to hope we shall fulfil with indefatigable zeal; and that every occasion of our reunion may be one of newly recorded triumphs."

et que chaque fois que nous nous réunirons désormais, ce sera pour enregistrer de nouveaux triomphes.

"C'est que la maladie" 2^e - Congress of German Naturalists & Physicians
Dusseldorf 1859. Rev. des C. 640.

